

Bicycle Calibration Data Sheet

Date of Measurement April 19, 2015

Name of Measurer Carlo Graciano

1. Ride the calibration course 4 times, recording data as follows:

<u>Ride</u>	<u>Start Count</u>	<u>Finish Count</u>	<u>Difference</u>	Pre-measurement	
1	<u>175,000</u>	<u>178,365</u>	<u>3,365</u>	Average Count	<u>3,364.25</u>
2	<u>178,365</u>	<u>181,729</u>	<u>3,364</u>	Time of Day	<u>7:52 am</u>
3	<u>181,729</u>	<u>185,094</u>	<u>3,365</u>	Temperature	<u>91 F</u>
4	<u>185,094</u>	<u>188,457</u>	<u>3,363</u>		

Length of Calibration Course 300.0906 m

WORKING CONSTANT = Number of counts in one kilometre or one mile, calculated from pre-measurement average count, and multiplied by **1.001 "safety factor"**

Working Constant = 11,221.99

2. Now, measure the course, including all intermediate distances, using the working constant. Enter data on the **"Course Measurement Data Sheet"**.

3. Recalibrate the bicycle by riding the calibration course 4 times, recording data as follows:

<u>Ride</u>	<u>Start Count</u>	<u>Finish Count</u>	<u>Difference</u>	Pre-measurement	
1	<u>303,000</u>	<u>306,362</u>	<u>3,362</u>	Average Count	<u>3,362.5</u>
2	<u>306,362</u>	<u>309,724</u>	<u>3,362</u>	Time of Day	<u>10:27 am</u>
3	<u>309,724</u>	<u>313,088</u>	<u>3,364</u>	Temperature	<u>91.5 F</u>
4	<u>313,088</u>	<u>316,450</u>	<u>3,362</u>		

FINISH CONSTANT = Number of counts in one kilometre or one mile, calculated from post-measurement average count, and multiplied by **1.001 "safety factor"**

Finish Constant = 11,216.15

Constant for the Day = **Either** the Average of the Working Constant and the Finish Constant **or** use the **larger** of the Working Constant and the Finish Constant.

CONSTANT FOR THE DAY = 11,219.07

Remember, each day's measurement must be preceded and followed by a calibration ride. You may measure as much as you want in a day, just so calibration precedes and follows it in the same 24 hour period. This is done to minimize error due to changes in tire pressure from thermal expansion and slow leakage. Frequent recalibration "protects" the previous measurement. A smart measurer will recalibrate frequently – you never know when a flat tire is coming!

CONVERSION FACTOR: 1 mile = 1.609344 kilometres

Bicycle Calibration Data Sheet

Date of Measurement April 19, 2015

Name of Measurer Eliecer Adames

1. Ride the calibration course 4 times, recording data as follows:

<u>Ride</u>	<u>Start Count</u>	<u>Finish Count</u>	<u>Difference</u>	Pre-measurement	
1	<u>349,000</u>	<u>352,370</u>	<u>3,370</u>	Average Count	<u>3,370.75</u>
2	<u>352,370</u>	<u>355,740</u>	<u>3,370</u>	Time of Day	<u>7:52 am</u>
3	<u>355,740</u>	<u>359,111</u>	<u>3,371</u>	Temperature	<u>91 F</u>
4	<u>359,111</u>	<u>362,483</u>	<u>3,372</u>		

Length of Calibration Course 300.0906 m

WORKING CONSTANT = Number of counts in one kilometre or one mile, calculated from pre-measurement average count, and multiplied by **1.001 "safety factor"**

Working Constant = 11,243.67

2. Now, measure the course, including all intermediate distances, using the working constant. Enter data on the **"Course Measurement Data Sheet"**.
3. Recalibrate the bicycle by riding the calibration course 4 times, recording data as follows:

<u>Ride</u>	<u>Start Count</u>	<u>Finish Count</u>	<u>Difference</u>	Pre-measurement	
1	<u>477,000</u>	<u>480,370</u>	<u>3,370</u>	Average Count	<u>3,370.5</u>
2	<u>480,370</u>	<u>483,741</u>	<u>3,371</u>	Time of Day	<u>10:27 am</u>
3	<u>483,741</u>	<u>487,112</u>	<u>3,371</u>	Temperature	<u>91.5 F</u>
4	<u>487,112</u>	<u>490,482</u>	<u>3,370</u>		

FINISH CONSTANT = Number of counts in one kilometre or one mile, calculated from post-measurement average count, and multiplied by **1.001 "safety factor"**

Finish Constant = 11,242.84

Constant for the Day = **Either** the Average of the Working Constant and the Finish Constant **or** use the **larger** of the Working Constant and the Finish Constant.

CONSTANT FOR THE DAY = 11,243.26

Remember, each day's measurement must be preceded and followed by a calibration ride. You may measure as much as you want in a day, just so calibration precedes and follows it in the same 24 hour period. This is done to minimize error due to changes in tire pressure from thermal expansion and slow leakage. Frequent recalibration "protects" the previous measurement. A smart measurer will recalibrate frequently — you never know when a flat tire is coming!

CONVERSION FACTOR: 1 mile = 1.609344 kilometres

APPLICATION FOR CERTIFICATION OF A ROAD COURSE

The Calibrated Bicycle Method Page #1

1. Name this course will be known by SDQ 10K – SANTO DOMINGO
2. Advertised Race Distance 10.0 KM
3. Date of Race MAY 10TH, 2015
4. Location of Start: City SANTO DOMINGO Country DOMINICAN REPUBLIC
- Finish (if different) City _____ Country _____

5. Person in Charge of Measurement:

<u>CARLO GRACIANO</u> (name)	<u>GUAYACAN 4</u> (address)
<u>PUNTA CANA</u> (City)	<u>8094812787</u> (telephone)
<u>DOMINICAN REPUBLIC</u> (Country)	<u>23000</u> Postal Code

6. Race Director (if course is measured for a specific race):

<u>Dore Vicioso</u> (name)	_____	(address)
<u>SANTO DOMINGO</u> (City)	<u>809 258 2050</u> (telephone)	
<u>DISTRITO NACIONAL</u> (Province)	_____	Postal Code

7. Is this an application for **recertification** of a previously certified course? If so give the reason(s) for recertification.

CALIBRATION OF BICYCLE

8. Did you calibrate the bicycle on a calibration course previously certified by the Road Running Technical Committee?
(YES or **NO**)

If YES, enclose a copy of the letter or certificate, and map, verifying RRTC certification of the calibration course.
If NO, you must enclose an Application for Certification of Calibration Course.

9. Is your **bicycle calibration data sheet** attached? **(YES)** or NO
10. Did you include the factor of 1.001 in your calibration constant? **(YES)** or NO

SUMMARY OF MEASUREMENTS

11. Date(s) of measurements APRIL 19, 2015
12. How many measurements of the course were made? 2
13. Name(s) of measurer(s) : CARLO GRACIANO AND ELIECER ADAMES

APPLICATION FOR CERTIFICATION OF A ROAD COURSE
The Calibrated Bicycle Method Page #2

14. Exact length of course 10.0 km
15. Difference between longest and shortest measurements 0.00651 km
16. Which measurement was used to establish the final race THE SHORTEST course?
17. Is your **bicycle calibration data sheet** YES attached?

COURSE LAYOUT AND MARKING

18. Is your **course map** attached? (YES) or NO)

NOTE: The course map need not be to scale but must indicate direction of north. It must be in one colour and fit on 8.5x11 paper. Descriptions of the **exact** positions of the **start, finish**, and all **turn-arounds** relative to permanent landmarks must be included on the map. Details of any restricted portions where cones and monitors are required must be detailed. Include a line representing the actual measured path.

19. List all intermediate **splits** (attach list describing the position of each, relative to permanent landmarks).
20. How far from the curb (edge of pavement) did you measure on curves? 0.30 M
21. If your course contains pairs of opposite turns (right-to-left or left-to-right) did you follow the shortest diagonal path?
(YES) or NO)
If NO, attach a detail of the measured path.
22. Does your course contain any turn-around (double-back) points? (YES or YES NO) If YES, attach a detail of the measured path.
23. Does your course contain any winding or "S" curved sections? (YES or NO) YES If YES, show by attached example, how you chose the route you measured.
24. Are runners to be restricted to a route longer than the shortest possible route for any portion of the race course?
(YES or NO) NO If YES, attach a description of how you plan to insure that the runners follow the measured course.
25. Type of course (check one):
- | | | | |
|---|-------------------------|--|-------------------------|
| <input checked="" type="checkbox"/> one loop | <u>1</u> time(s) | <input type="checkbox"/> same out/back | <u> </u> time(s) |
| <input type="checkbox"/> figure-8 | <u> </u> time(s) | <input type="checkbox"/> several out/back sections | |
| <input type="checkbox"/> partial loop | | <input type="checkbox"/> keyhole (out/loop/back). | |
| <input type="checkbox"/> complex of different loops | | <input type="checkbox"/> point-to-point | |
26. Straight-Line Distance (as the crow flies) between Start and Finish 0

APPLICATION FOR CERTIFICATION OF A ROAD COURSE
The Calibrated Bicycle Method Page #3

27. Altitude of Race Course (above mean sea level):

(metres or feet) Start 27 finish 27 highest 37 lowest 13

28. Type of surface (give percentages):

<u>100</u>	curbed streets	_____	graded dirt road
_____	uncurbed streets/roads	_____	ungraded dirt road
_____	concrete sidewalk	_____	gravel road
_____	concrete/brick streets/road	_____	undefined paved surface
_____	paved bike path	_____	undefined dirt surface
_____	unpaved bike path	_____	undefined grass surface
_____	trail (single file)	_____	track (curbed or uncurbed)

If your course contains any unpaved sections, please attach a detail of the method(s) used to measure such sections.

29. Is a description of the exact starting and finishing (and any turn-around points, if any) attached? This description should include diagrams, including street names and taped distances from the start/finish (and turnaround) points to near-by prominent landmarks, so that a stranger could find them.

YES (YES or NO)

30. How did you mark the start and finish (and turn-around) points? . **WITH A NAIL, ORANGE SURVEY MARKER AND RED PAINT**

31. Did the same person ride the bicycle on both the calibration course and the race course for any given measurement?

YES (YES or NO)

32. Were both the calibration course and the race courses DRY during the calibration and measurement rides?

YES (YES or NO)

33. Did you perform both the pre-measurement and the post-measurement calibrations and the measurement of the race course in the same 24 hour period?

YES (YES or NO)

COURSE MEASUREMENT DATA SHEET

Name of Course or Race Name _____

Name of Measurer #1 Carlo Graciano Working Constant #1 11,221.99

Date April 19, 2015 Start Time 8:45 am Temperature 91 F

Finish Time 10:00 am Temperature 91.5 F

Name of Measurer #2 Eliecer Adames Working Constant #1 11,243.67

Date April 19, 2015 Start Time 8:45 am Temperature 91 F

Finish Time 10:00 am Temperature 91.5 F

Measurement Data. Use the first measurement ride to lay out the start/finish points and all intermediate split points. Use the second ride to check the location of **those same points**. **Do not use two sets of marks!**

Measured Point	Measurer #1		Distance	Measurer #2		Distance
	Recorded	Elapsed		Recorded	Elapsed	

Preliminary Course Length	Start-to-finish counts	divide by	working constant =	measured length
Measurer #1	<u>113,582</u>)	<u>11,221.99</u>	<u>10.121378</u>
Measurer #2	<u>113,900</u>)	<u>11,243.67</u>	<u>10.130144</u>

Difference between lengths #1 and #2 0.00877 divide by 10.121378 length #1 = 0.00086612109 Measurement Comparison (less than 0.0008?) Yes or No

IMPORTANT. Before you leave the course, compare the two measurements. They should agree to within 0.08%. If the two preliminary measurements do not agree to within 0.08%, something is wrong. Fix it! Then go to the calibration course and recalibrate. If either of the **Constants for the Day** (for measurements #1 and #2) are **not** the same as the **Working Constant**, recalculate the length of the course here.

Final Course Length	Start-to-finish counts	divide by	constant for the day	=	length of course
Measurer #1	<u>113,582</u>)	<u>11,219.07</u>	=	<u>10.12401</u>
Measurer #2	<u>113,900</u>)	<u>11,243.26</u>	=	<u>10.13052</u>

The length of the race course as measured by the calibration bicycle is the *lesser* of the two lengths calculated above.

Measured course length. 10.12401 Desired course length 10.00000

Use a steel tape to add or subtract distance as required to bring the **minimum** length to the same value as the desired course length.

How much did you add or subtract, and where (start, finish, turn-around point)? -62.475 m = [(-124.01 - (pi*r))/2]

Note: You need not adjust intermediate split points unless certification is desired for those points as well. Did you adjust the intermediate points and, if so, how?. **Yes. Adjusted KM 8 and KM 9 by steel tape.**

<u>Measured Point</u>	<u>Measurer #1</u>			<u>Measurer #2</u>		
	<u>Recorded</u>	<u>Elapsed</u>	<u>Distance</u>	<u>Recorded</u>	<u>Elapsed</u>	<u>Distance</u>
START	189,000			363,000		
1 KM	200,222	11,222	1.00026	374,260	11,260	1.00149
2 KM	211,444	22,444	2.00052	385,509	22,509	2.00200
Retorno 1	215,126	26,126	2.32871	389,210	26,210	2.33118
3 KM	222,666	33,666	3.00078	396,773	33,773	3.00384
4 KM	233,888	44,888	4.00104	408,028	45,028	4.00489
5 KM	245,109	56,109	5.00122	419,284	56,284	5.00602
6 KM	256,331	67,331	6.00148	430,534	67,534	6.00662
7 KM	267,554	78,554	7.00183	441,783	78,783	7.00713
TP1	271,847	82,847	7.38448	446,089	83,089	7.39012
8 KM	278,776	89,776	8.00209	453,033	90,033	8.00773
9 KM	289,998	100,998	9.00235	464,284	101,284	9.00842
FINISH	302,582	113,582	10.12401	476,900	113,900	10.13052

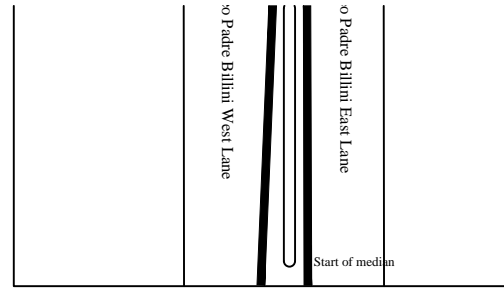
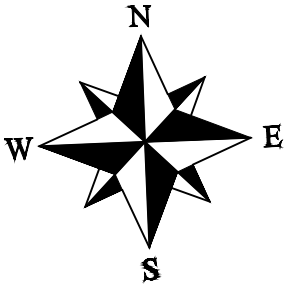
WORKING CONST. = 11,221.99

CONST. DAY = 11,219.07

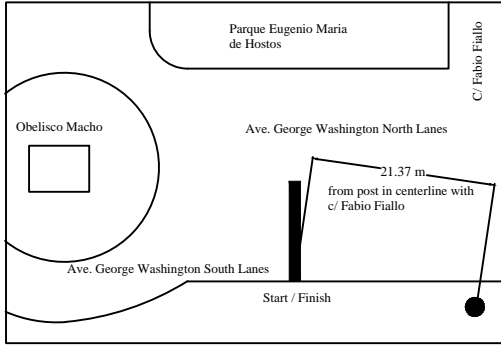
WORKING CONST. = 11,243.67

CONST. DAY = 11,243.26

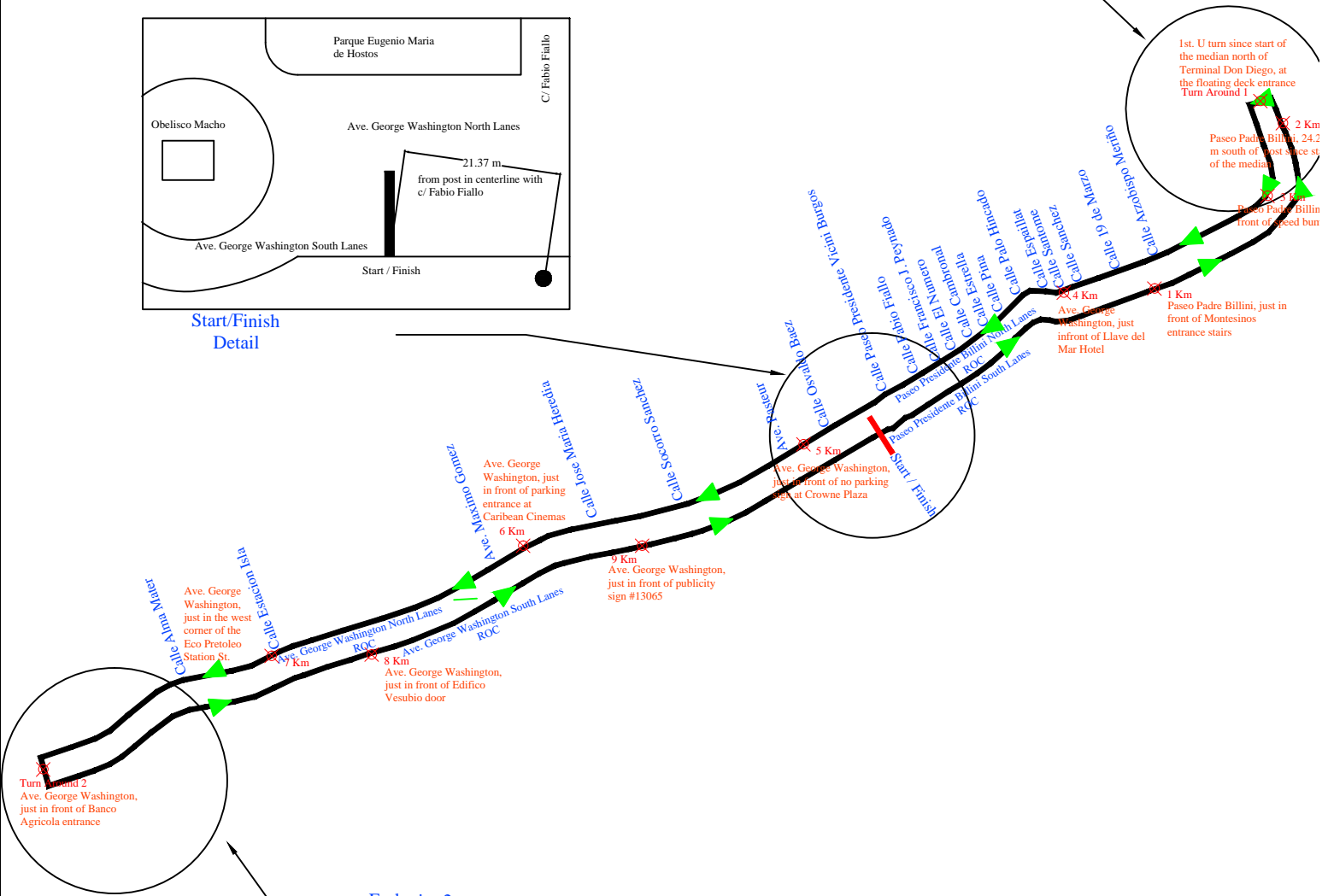
$$TP1 \text{ ADJUSTMENT} = [((10 - 10.12401) * 1000) - (Pi * r)] / 2 = [(-124.01 - 0.94)] / 2 = -62.475 \text{ m}$$



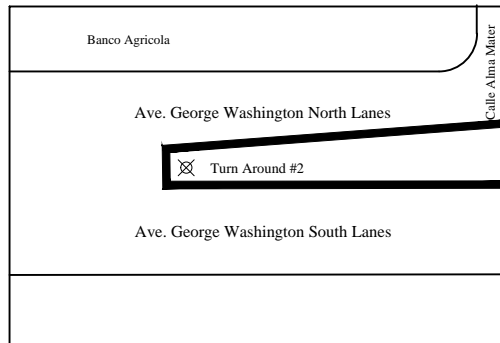
Turn Around 1
Detail



Start/Finish
Detail



Endpoint 2
Detail



COURSE NAME: SDQ 10k – Santo Domingo	DATE: April 19, 20
ADVERTISED RACE DISTANCE: 10 KM	SCALE: NOT KNOWN
LOCATION OF START: Ave. George Washington	REVISION: -
LOCATION OF FINISH: Ave. George Washington	SHEET #: 01
PERSON IN CHARGE OF MEASURING: CARLO GRACIANO	
RACE DIRECTOR: DORE VICIOSO	