



(RE)MEASUREMENT REPORT

10. ZRENJANIN HALFMARATHON

Organizer: Sportsko udruženje Zrenjaninski polumaraton
Milana Radovančeva 4
23000 Zrenjanin
Srbija

by Borut Podgornik
WA/AIMS course measurer

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SUMMARY OF MEASUREMENT ZRENJANIN HALFMARATHON

Date of measurement: 11. 7. 2026

How many measurements of the course were made? 1

Name of measurer: Borut Podgornik

How much of the road width is available to runners throughout the length of the road race course?

Entire width of the road is available to runners on the whole course, except the part between 2,0 km and 2,8 km of original lap from the start, where always the right side of the road is available to runners, divided with cones in the middle of the road (see pictures 12 and 13 – on the bridges).

If the route at turns cannot be described as the „shortest possible route“, explain what restrictions will apply, and how these will be enforced?

The course was measured as the shortest possible route on above described roads all the way.

Length of course after any adjustment: 21.097,50m

Difference between longest and shortest measurement: /

Which measurement was used to establish the final course length and WHY?

The final course length of the course was established after bicycle postcalibration and calculation of all three laps + moving a provisional point A for 21cm onwards.

OVERVIEW OF THE MEASUREMENT PROCEDURE

Zrenjanin halfmarathon is already a traditional event, organized this year for 10th time. The organizer is a Sport Association in Zrenjanin. Most people are running a halfmarathon, but they have also 14 km, 7 km fun run and a relay 3 x 7 km on the same course with the same starting point and starting time. The date of the event for this year is Sunday, 20th September with start at 11.00. Approximate number of participants on all runs will be around 800, having this approximate number already in the last year.

The course was already measured 8 years ago, but the certificate expired, so the organizer decided to make the length of the course exactly measured again in order to get the achieved results again recognized internationally and to attract more top runners in the next years. They want to renew an AIMS certificate for the course as well, that's why I have prepared this report in English and send it to WA together with application documents for certificate.

The specificity of this event is that they want to have race start in the center of the town and to show the most attractive parts of the city, so they designed a loop of cca 7 km, which should be run 3 times, passing after 1st and 2nd lap through the finish line (which is new comparing to the old measurement). This fact made the measurement even easier. The course starts in front of City hall at the Freedom Square (pedestrian area), running laps in counter clockwise direction with the same finish point (pictures 5 and 6).

I have found an appropriate road for calibration course in Ečka near Zrenjanin and used it already for measurement of race walking course there (pictures 1 to 4). The calibration course is app. 6,5km away from the City center of Zrenjanin, so a bit further but easy to reach anyway. Bicycle calibration was done before and after the measurement as a standard procedure on this course.

The remeasurement of the course was very simple. I started at the starting point of the race in the Freedom Square and made a ride with a bicycle in running direction on shortest possible route accompanied with a Police car in the front or on the back (depends on traffic situation) and a car of the organizer mostly in the front (except at the pedestrian area). When reaching the provisional point A (turn from Dositeja Obradovića street sharp left and back to the same street – see pictures 7 to 9) I made a mark. Then I continued to finish at the same point as started. Then I calculate the length of a total lap and found out that the length is almost correct. After postcalibration of the bike and calculating the length of the course (see data sheet below) I came to the result that there is only 0,42 m missing, so I moved Point A for half of this distance = 0,21 m onwards (see picture 5). The organizer shall provide a separation in the middle of that part of the course where two way of running is going to happen with cones (app. 800m) – see pictures 12 and 13. The course is on tarmac road almost all the way (see picture 16), there are some cablestones at the beginning and is relatively flat (see picture 17), the difference between the lowest and the highest point is only 10m. Start/finish is at 85m.

THE STREETS AND ROADS FOR BASIC LAP

STREET BY STREET	KM	LINES AVAILABLE
Freedom Square	START	full
Szabadsag Ter		full
Kralja Aleksandra I Karađorđevića		full
Svetosavska		full
Slobodana Bursaća	1	full
Saveznička		full
Petefijeva		full
Obilićeva		full
Obala Sonje Marinković		full
Dr. Slavka Županskog	2	full
Subotićeva		right
Narodne omladine		right
Zmaj Jovina		right
Đure Jakšića	3	full
Marka Oreškovića		full
Pančevačka		full
Despota Stefana	4	full
Dr. Laze Kostića		full
Dositeja Obradovića	5	full
Koče Kolarovića		full
Žitni trg		full
Vojvode Petra Bojovića	6	full
Zmaj Jovina		right
Narodne omladine		right
Subotićeva		right
Szabadsag Ter	7	full
Freedom Square	FINISH	full

DETAILS OF THE CALIBRATION COURSE

- 1 Name of event: Zrenjanin halfmarathon
- 2 City/town: Ečka near Zrenjanin, Serbia
- 3 Location of calibration course: along Aerodromska cesta (Airport road) in the village of Ečka (without traffic), start at far edge of 1st concrete electricity pole (2,11 m away) on the left side, 30cm from the left edge of the road (see pictures 1 and 2), finish 3,49m diagonal after far edge of the kerb on the left side at the drive to the house no. 29 at Aerodromska cesta on the left side (see pictures 3 and 4).
- 4 Length of calibration course: 300,00m
- 5 Date measured: 10. 3. 2018
- 6 Method used to measure calibration course: 50m steel tape (20°C, 50N)
- 7 How many times did you measure the calibration course? 2x
- 8 Measurement team leader: Borut Podgornik
- 9 Address of team leader: Staneta Severja 14, 2000 Maribor, Slovenia
- 10 Phone contact of team leader: +386 41 664412
- 11 Email address of team leader: borut.podgornik@triera.net
- 12 List names and duties of team members: Helena Javornik, assistant
- 13 Is the calibration course: STRAIGHT? YES PAVED? YES
- 14 How are the start and finish points marked? PK nails
- 15 Are the start and finish points located in the road where a bicycle wheel can touch them? YES
- 16 Number of full tape lengths 6 Total length: 6 x 50m = 300m
- 17 A picture of calibration course:



STEEL TAPING DATA SHEET (for measuring a calibration course)

Name of calibration course: Aerodromska cesta in Ečka

City/town and State: Ečka near Zrenjanin, Serbia

Date: 10. 3. 2018

Start time: 12.35 **Finish time:** 13.05

Pavement temperature: Start 17°C Finish 17°C Average 17°C
(thermometer shaded from direct sun)

Measurements and calculations:

- 1 First measurement. This establishes tentative start and finish marks which should not be changed until the final adjustment on line 6 below.

$$\begin{array}{ccccccc} 6 & \times & 50,00\text{m} & + & / & = & 300,00\text{m} \\ \text{\# tape} & & \text{distance per} & & \text{partial tape} & & \text{measured} \\ \text{lengths} & & \text{tape length} & & \text{length} & & \text{distance} \end{array}$$

- 2 Second measurement. This checks the distance between the SAME tentative start and finish points marked in the first measurement, but use new intermediate taping points.

$$\begin{array}{ccccccc} 6 & \times & 50,00\text{m} & + & 0,012\text{m} & = & 300,012\text{m} \\ \text{\# tape} & & \text{distance per} & & \text{partial tape} & & \text{measured} \\ \text{lengths} & & \text{tape length} & & \text{length} & & \text{distance} \end{array}$$

- 3 Average raw (uncorrected) measurement of course: 300,006m

- 4 Temperature correction. Use the average pavement temperature during measurement. Work out answer to at least seven digits beyond the decimal point.

$$\text{Correction factor} = 1.0000000 + (.0000116 \times [17 - 20])$$

$$\text{Correction factor} = 0,9999652$$

NOTE: For temperatures below 20C, factor is less than one

For temperatures above 20C, factor is greater than one

- 5 Multiply the temperature correction factor by the average raw measurement of the course

$$\begin{array}{ccccccc} 0,9999652 & \times & 300,006\text{m} & = & 299,9955 \\ \text{correction factor} & & \text{avg. raw measurement} & & \text{corrected measurement} \end{array}$$

- 6 I moved the finish mark for 4,5 mm onwards and drive PK nail into the road.

Final (adjusted) length of calibration course 300,00m

BICYCLE CALIBRATION DATA SHEET

Name of event: Zrenjanin halfmarathon

Date of measurement : 11. 7. 2026

Name of measurer: Borut Podgornik

Length of calibration course: 300,00m

PRE-CALIBRATION - ride the calibration course four times, recording data as follows:

Ride	Start Count	Finish count	Difference
1	94000	97298	3298
2	97298	100594	3296
3	100594	103890	3296
4	103890	107187	3297

Time of day: 6.15

Temperature: 18°C

WORKING CONSTANT = number of counts in one kilometre, calculated from the pre-measurement average count, and multiplied by 1.001 – the „short course prevention factor“

Pre-measurement average count = 3296,75

Counts per km = pre-measurement average count x 1000/length of calibration course in metres

Working Constant = counts per km x 1.001 = **11.000,155833334**

POST-CALIBRATION - ride the calibration course four times, recording data as follows:

Ride	Start Count	Finish count	Difference
1	91000	94197,5	3297,5
2	94197,5	97594,5	3297
3	97594,5	100891	3296,5
4	100891	104187	3296

Time of day: 8.15

Temperature: 20°C

FINISH CONSTANT = number of counts in one kilometre, calculated from the post-measurement average count, and multiplied by 1.001 – the „short course prevention factor“

Post-measurement average count = 3296,75

Counts per km = post-measurement average count x 1000/length of calibration course in metres

Finish Constant = counts per km x 1.001 = **11.000,155833334**

CONSTANT FOR THE DAY = the average of the working constant and the finish constant = **11.000,155833334**

COURSE MEASUREMENT DATA SHEET

Name of event: Zrenjanin halfmarathon

Name of measurer: Borut Podgornik

Date of measurement: 11. 7. 2026

Start time: 7.10 Temperature: 19°C

Finish time: 8.30 Temperature: 20°C

Constant for the Day: 11.000,155833334 counts/km

MEASUREMENT DATA

Measured point	Counter reading	Cumulative counts	Cumulative distance in m	Adjustment in m
S/F – parallel to 2nd light pole on Freedom Square, just opposite of a monument in the middle of the Square – see pictures 5 and 6	10000	00000	0,00	/
A – turn from Dositeja Obradovića street sharp left and back to the same street – see pictures 7 to 9	63790	53790	4889,93	/
S/F - parallel to 2nd light pole on Freedom Square, just opposite of a monument in the middle of the Square – see pictures 5, 6 and 10	87354	77354	7.032,08	/

Desired length of course: 21.097,5 m (= 7.032,5 m one lap)

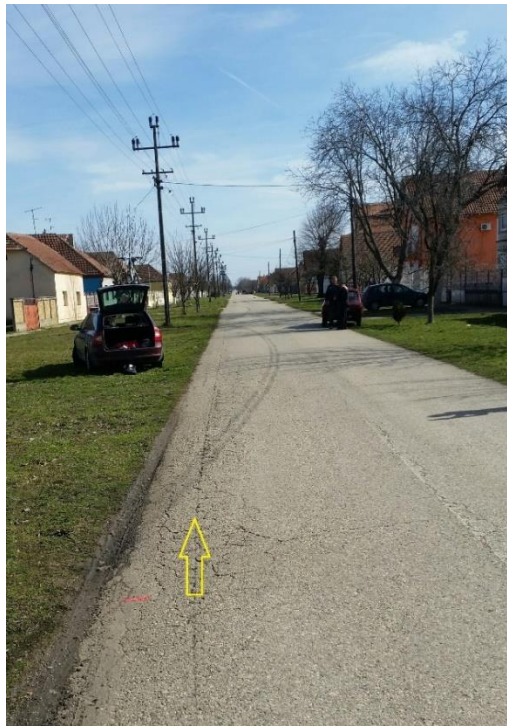
Length of the full lap as measured (after postkalibration): **7.032,08 m**

The measured course was for 0,42 m short, so I moved Point A for half of this distance = 0,21 m onwards measuring with steel tape (see picture 7) .

CALIBRATION COURSE START – (picture 1)



CALIBRATION COURSE ONWARDS – (picture 2)



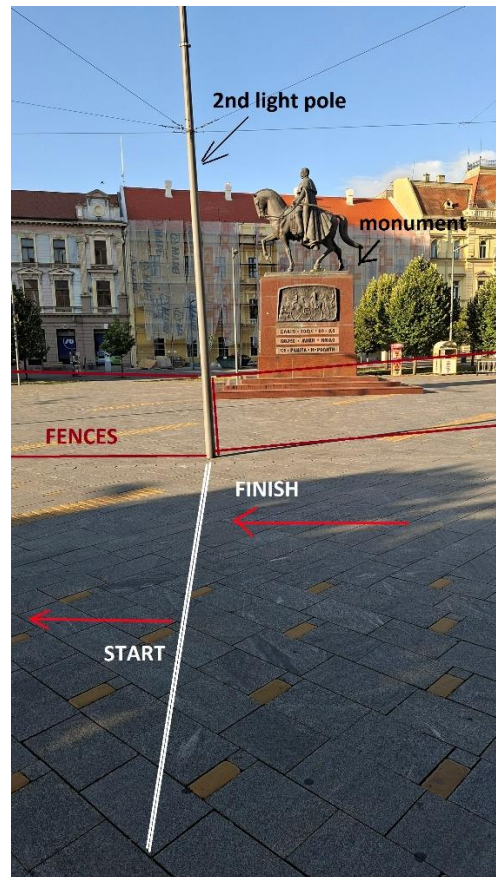
CALIBRATION COURSE FINISH – (picture 3)



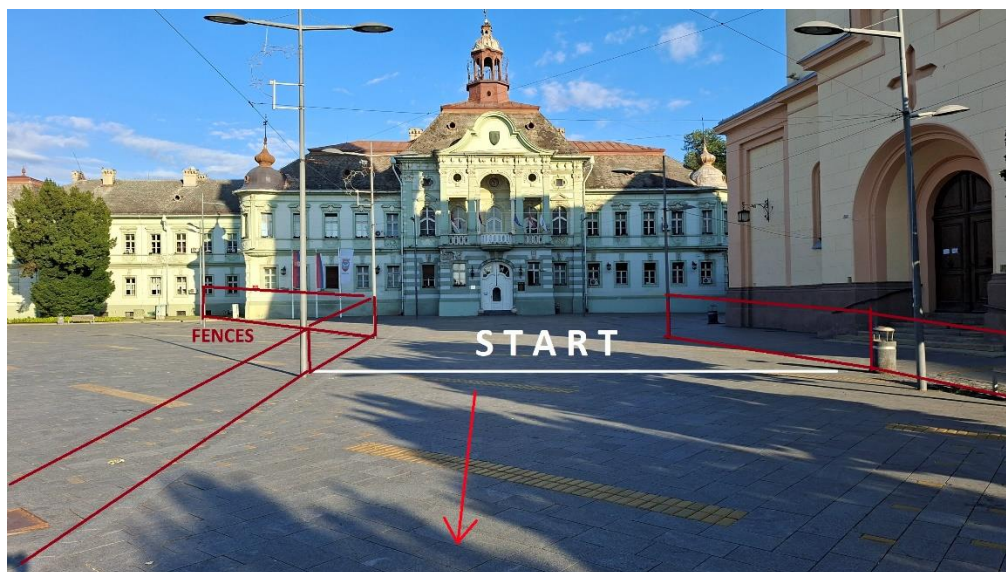
CALIBRATION COURSE BACKWARDS – (picture 4)



START/FINISH side view – (picture 5)



START backwards - (picture 6)



POINT A side view – (picture 7)



POINT A backwards – (picture 8)



POINT A aerial view – (picture 9)



START/ FINISH – (picture 10)



SOME DETAILS OF THE COURSE

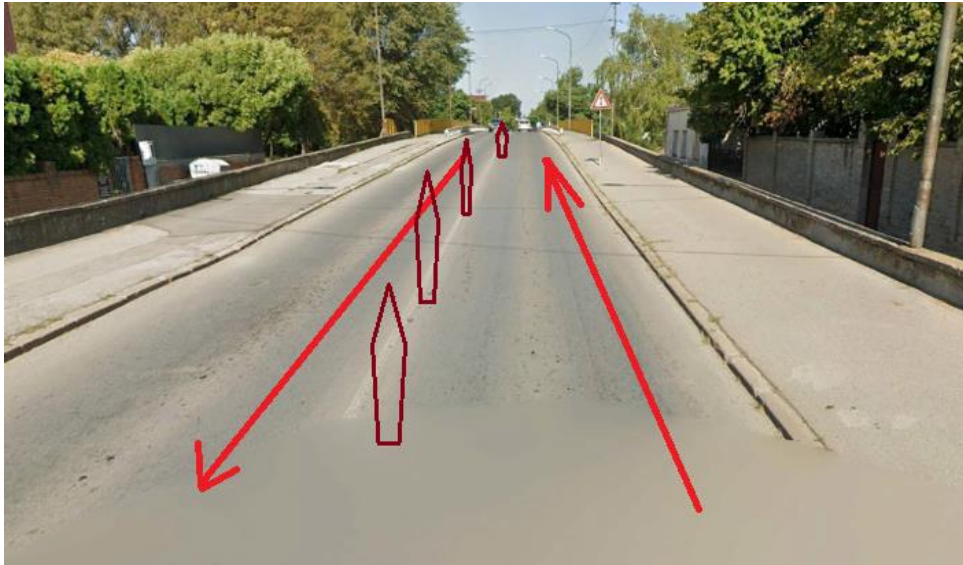
JUST AFTER THE START – (picture 11)



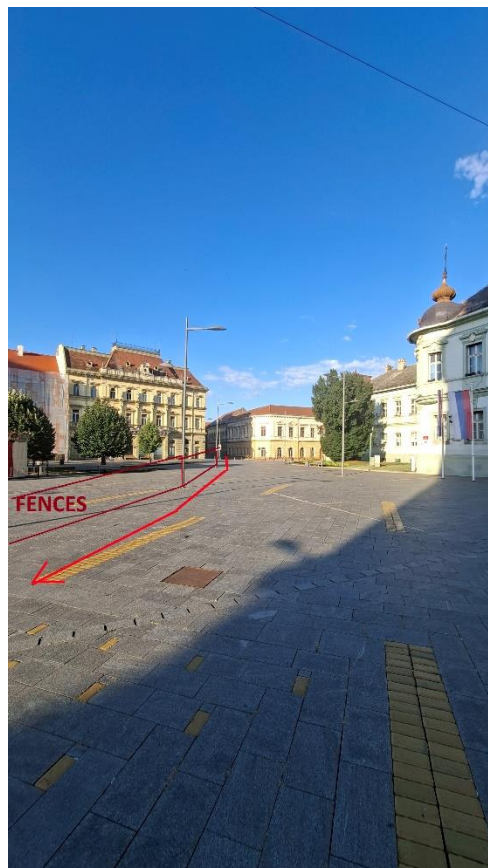
OVER THE 1st BRIDGE backwards – (picture 12)



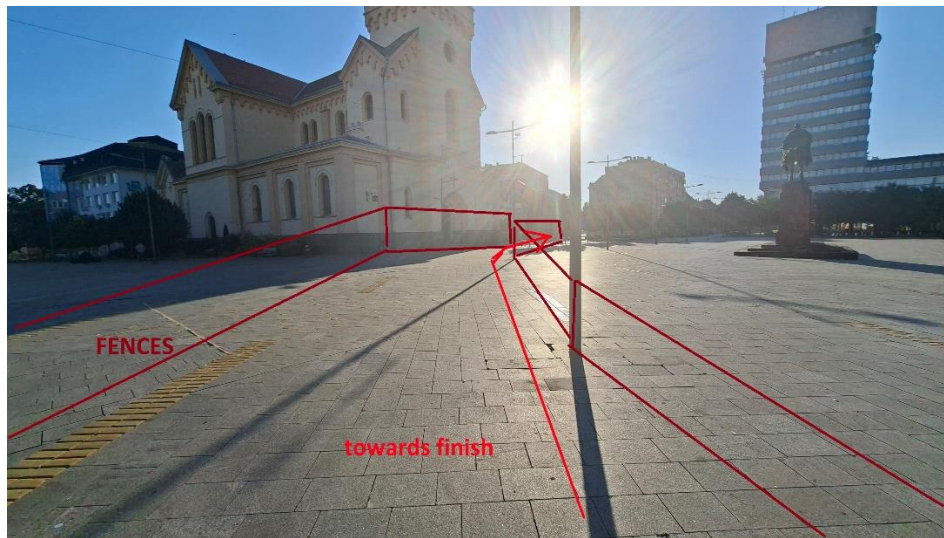
OVER THE 2nd BRIDGE backwards – (picture 13)



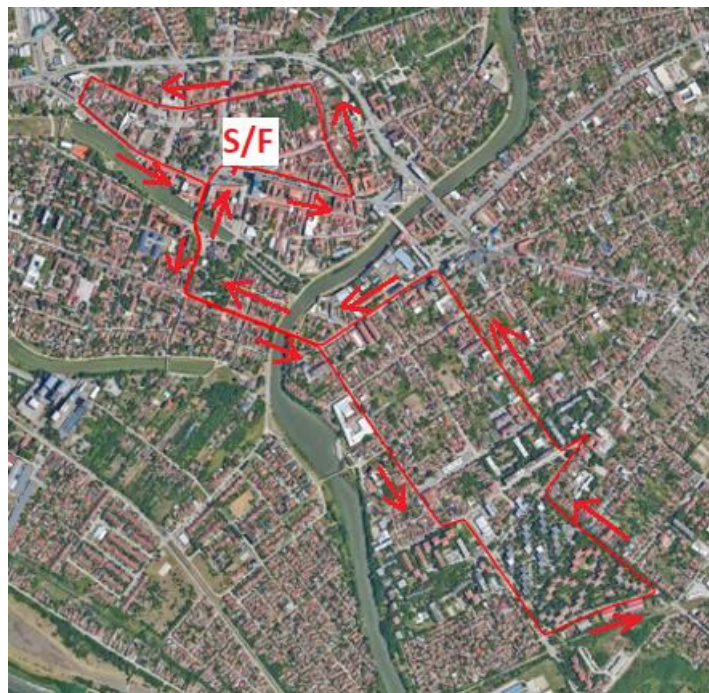
JUST BEFORE THE FINISH backwards – (picture 14)



JUST BEFORE THE FINISH onwards – (picture 15)



THE COURSE - (picture 16)



ELEVATION PROFILE one lap – (picture 17)



Maribor, 13th July 2026

Report prepared by: Borut Podgornik

