

COURSE MEASUREMENT SUMMARY SHEET

NAME OF EVENT: Tallinna Maraton – 21,1 km

LOCATION: Tallinn, Estonia

RACE DATE: 11.09.2021

DISTANCES: 21,1 km

Advertised race distance: not less than 21097.5 m

Race director: Mati Lilliallik

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Name of measurer: Karen Aau

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DESCRIPTION OF THE COURSE

Type of terrain: generally flat

Race surface: tarmac roads

Type of course: 2 laps (6.6 km and 14.7 km)

MEASUREMENT DETAILS

Section of road available: Entire width of road, except at Pirita tee and Merivälja tee (sea side car lane)

Line to be taken at turns: shortest possible route

SIGNED: Karen Aau

DATE: 24.08.2021


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DETAIL OF THE CALIBRATION COURSE

Location of calibration course: Marta street, Tallinn

Date: 05.07.2021

Start time: 21:35

Finish time: 22:10

Temperature: *Start* +28°C, *Finish* +27°C, *Average* +27,5 °C

MEASUREMENTS AND CALCULATIONS:

- 1 First measurement.

$$\frac{6}{\text{\# tape lengths}} \times \frac{50 \text{ m}}{\text{distance per tape length}} + \frac{\text{partial tape length}}{\text{length}} = \frac{300 \text{ m}}{\text{measured distance}}$$

- 2 Second measurement.

$$\frac{5}{\text{\# tape lengths}} \times \frac{50 \text{ m}}{\text{distance per tape length}} + \frac{49,996 \text{ m}}{\text{partial tape length}} = \frac{299,996 \text{ m}}{\text{measured distance}}$$

- 3 Average raw (uncorrected) measurement of course 299,998 m

- 4 Temperature correction.

$$\text{Correction factor} = 1 + (0.0000116 \times [27,5 - 20]) = 1,000087$$

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

$$\frac{1,000087}{\text{correction factor}} \times \frac{299,998 \text{ m}}{\text{avg. raw measurement}} = \frac{300,024 \text{ m}}{\text{corrected measurement}}$$

- 6 Final (adjusted) length of calibration course: **300 m**

$$300,024 - 0,024 \text{ m} = 300 \text{ m}$$

Summary: We adjusted the calibration course by subtracting 2,4 cm

BICYCLE CALIBRATION DATA SHEET

PRE-CALIBRATION:

Day: 18.08.2021

Time: 20.36

Temperature: +15°C

Start count	Finish count	Difference
509422	512707	3285
512707	515994	3287
515994	519279	3285
519279	522566	3287

Pre-measurement average count = $(3285+3287+3285+3287) / 4 = 3286$

Counts per km = $3286 \times 1000/300 = 10953,3333$

Working Constant = $10953,3333 \times 1.001/1000 = 10,9642867 \text{ c/m}$

POST-CALIBRATION:

Day: 19.08.2021

Time: 00.57

Temperature: +15°C

Start count	Finish count	Difference
801115	804399	3284
804399	807683	3284
807683	810968	3285
810968	814253	3285

Post-measurement average count = $(3284+3284+3285+3285) / 4 = 3284,5$

Counts per km = $3284,5 \times 1000/300 = 10948,3333$

Working Constant = $10948,3333 \times 1.001/1000 = 10,9592817 \text{ c/m}$

CONSTANT FOR THE DAY = $(10,9642867 + 10,9592817) / 2 = 10,9617842 \text{ c/m}$

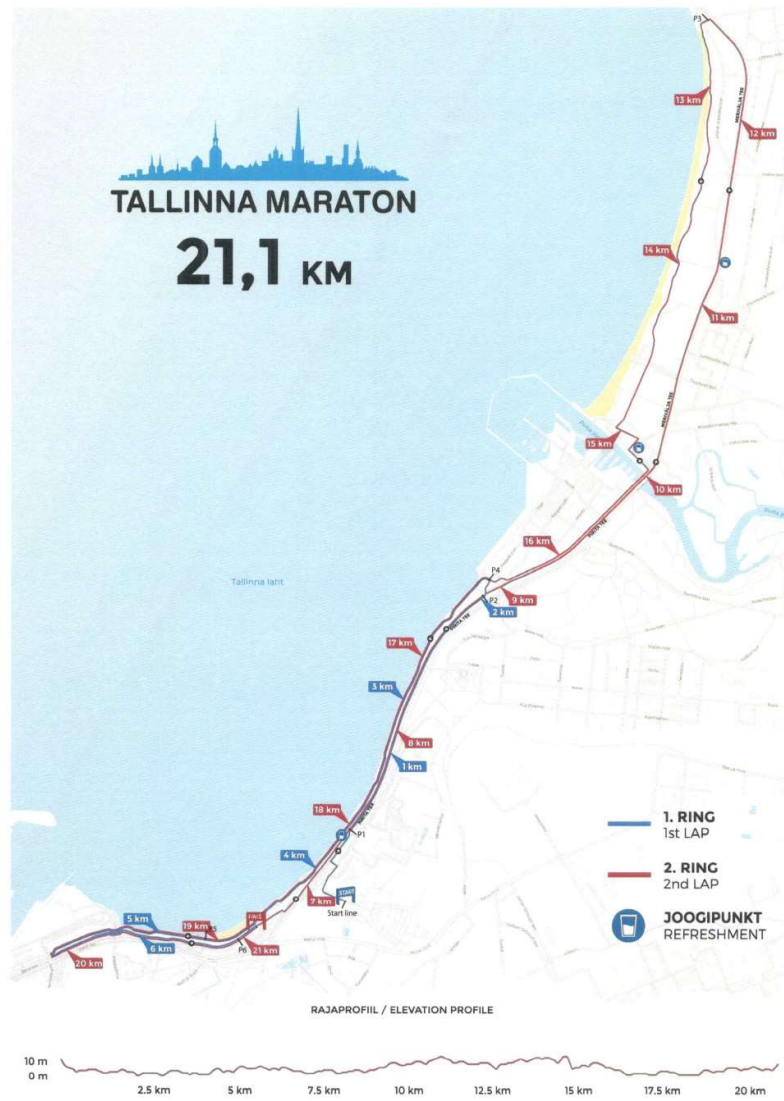
COURSE MEASUREMENT DATA SHEET

reading	counts	distance	adj.dist	location
---Measured running direction on 18.08.2021, c = 10,9617842 m---				
797059	0	0.0 m		Start line
802712	5653	515.7 m		P1 – traffic light post left hand on the turn to bus lane
---Measured in reverse on 18.08.2021, c = 10,9617842 m---				
780337	0	515.7 m		P1 – traffic light post left hand on the turn to bus lane
763873	16464	2017.6 m		P2 – lp left hand before turn to Regati pst
679528	0	2017.6 m		P4 - give way sign post left hand after turn to light traffic road
680470	942	2103.5 m		P2 – lp left hand before turn to Regati pst
679528	0	2103.5 m		P4 - give way sign post left hand after turn to light traffic road
650550	28978	4747 m		P5 – Concrete wall end corner right hand
650550	0	4747 m		P5 – Concrete wall end corner right hand
629660	20890	6652.7 m		P6 – Concrete “floor” corner right hand
789772	0	6652.7 m		P6 – Concrete “floor” corner right hand
780337	9435	7513.4 m		P1 – traffic light post left hand on the turn to bus lane
780337	0	7513.4 m		P1 – traffic light post left hand on the turn to bus lane
763873	16464	9015.3 m		P2 – lp left hand before turn to Regati pst
763873	0	9015.3 m		P2 – lp left hand before turn to Regati pst
723097	40776	12735.1 m		P3 - traffic light post left hand after the turn Mähe-Kaasiku road
723097	0	12735.1 m		P3 - traffic light post left hand after the turn Mähe-Kaasiku road
681518	41579	16528.2 m		P4 - give way sign post left hand after turn to light traffic road
679528	0	16528.2 m		P4 - give way sign post left hand after turn to light traffic road
650550	28978	19171.7 m		P5 – Concrete wall end corner right hand
--- adjustment here adds 20.1m ---				
650550	0	19171.7 m		P5 – Concrete wall end corner right hand (2 nd lap)
629660	20890	21077.4 m	21097.5 m	P6 – Concrete “floor” corner right hand (2 nd lap)

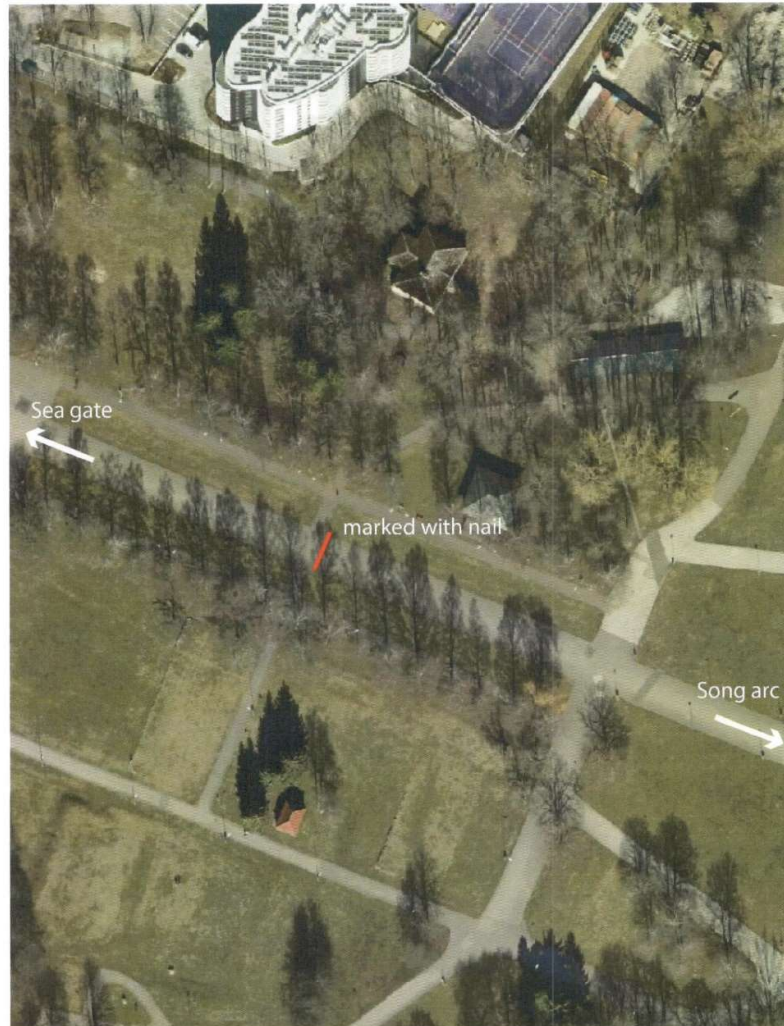
Note any adjustments made to the course after measurement:

On the second lap added 20.1 meters for the section P5->P6 (2nd lap) with steel tape

COURSE



START LINE



FINISH LINE

