

COURSE MEASUREMENT SUMMARY SHEET

NAME OF EVENT: Tartu Linnamaraton 21,1 km

LOCATION: TARTU, ESTONIA

RACE DATE: 03.10.2020

DISTANCES: 21,0975 KM

Advertised race distance: not less than 21097,5 m

Race director: Indrek Kelk

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Name of measurer: Karen Aau

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DESCRIPTION OF THE COURSE

Type of terrain: generally flat, hilly sections for the last 2 km

Race surface: Tarmac roads, short gravel section

Type of course: loop

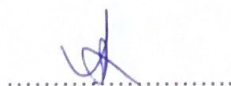
MEASUREMENT DETAILS

Section of road available: Entire width of road

Line to be taken at turns: shortest possible route

SIGNED: Karen Aau

DATE: 29.09.2020



DETAIL OF THE CALIBRATION COURSE

Location of calibration course: bathway at Ihaste tee

Date: 27.09.2020

Start time: 9:00

Finish time: 10:00

Temperature: *Start* +10°C, *Finish* +12°C, *Average* +11 °C

MEASUREMENTS AND CALCULATIONS:

- 1 First measurement.

$$\frac{6}{\text{\# tape lengths}} \times \frac{49,9 \text{ m}}{\text{distance per tape length}} + \frac{0,6 \text{ m}}{\text{partial tape length}} = \frac{300 \text{ m}}{\text{measured distance}}$$

- 2 Second measurement.

$$\frac{6}{\text{\# tape lengths}} \times \frac{49,9 \text{ m}}{\text{distance per tape length}} + \frac{0,617 \text{ m}}{\text{partial tape length}} = \frac{300,004 \text{ m}}{\text{measured distance}}$$

- 3 Average raw (uncorrected) measurement of course 300,002 m

- 4 Temperature correction.

$$\text{Correction factor} = 1 + (0.0000116 \times [12 - 20]) = 0,9999072$$

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

$$\frac{0,9999072}{\text{correction factor}} \times \frac{300,002 \text{ m}}{\text{avg. raw measurement}} = \frac{299,974 \text{ m}}{\text{corrected measurement}}$$

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

$$\underline{299,974 \text{ m}} + 0,026 \text{ m} = \underline{300 \text{ m}}$$

Summary: To get 300 m length calibration course, added 0,026 m with steel tape.

BICYCLE CALIBRATION DATA SHEET

PRE-CALIBRATION:

Day: 28.09.2020

Time: 10.30

Temperature: +12°C

Start count	Finish count	Difference
774559	777842	3283
777842	781126	3284
781126	784410	3284
784410	787694	3284

Pre-measurement average count = $(3283+3284+3284+3284) / 4 = 3283,75$

Counts per km = $3283,75 \times 1000 / 300 = 10945,83333$

Working Constant = $10945,83333 \times 1.001 / 1000 = 10,95677916 \text{ c/m}$

POST-CALIBRATION:

Day: 28.09.2020

Time: 13.30

Temperature: +14°C

Start count	Finish count	Difference
052400	055684	3284
055684	058968	3284
058968	062252	3284
062252	065536	3284

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

Counts per km = $3284 \times 1000 / 300 = 10946,66666$

Working Constant = $10946,66666 \times 1.001 / 1000 = 10,95761332 \text{ c/m}$

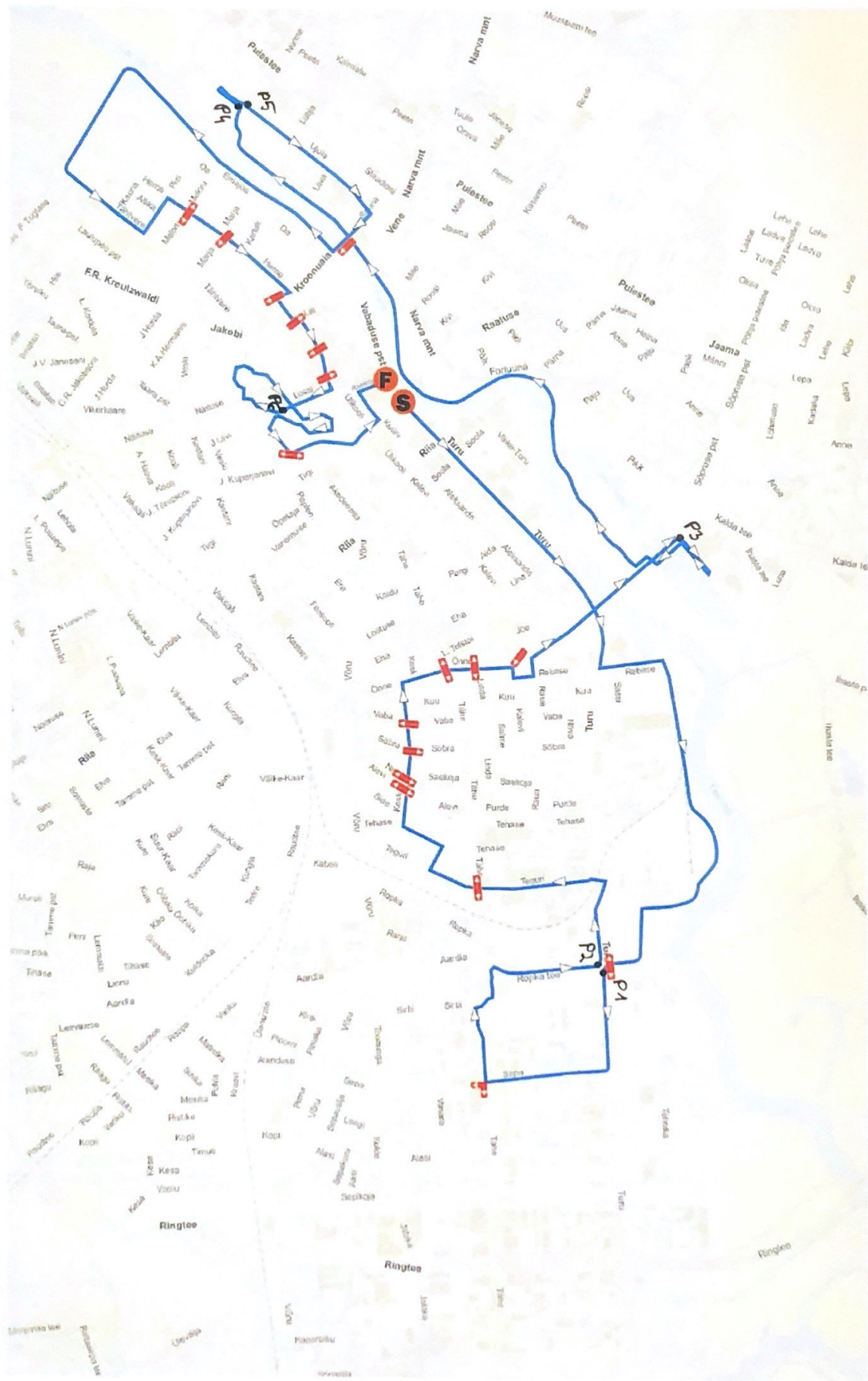
CONSTANT FOR THE DAY = $(10,95677916 + 10,95761332) / 2 = 10,95719624 \text{ c/m}$

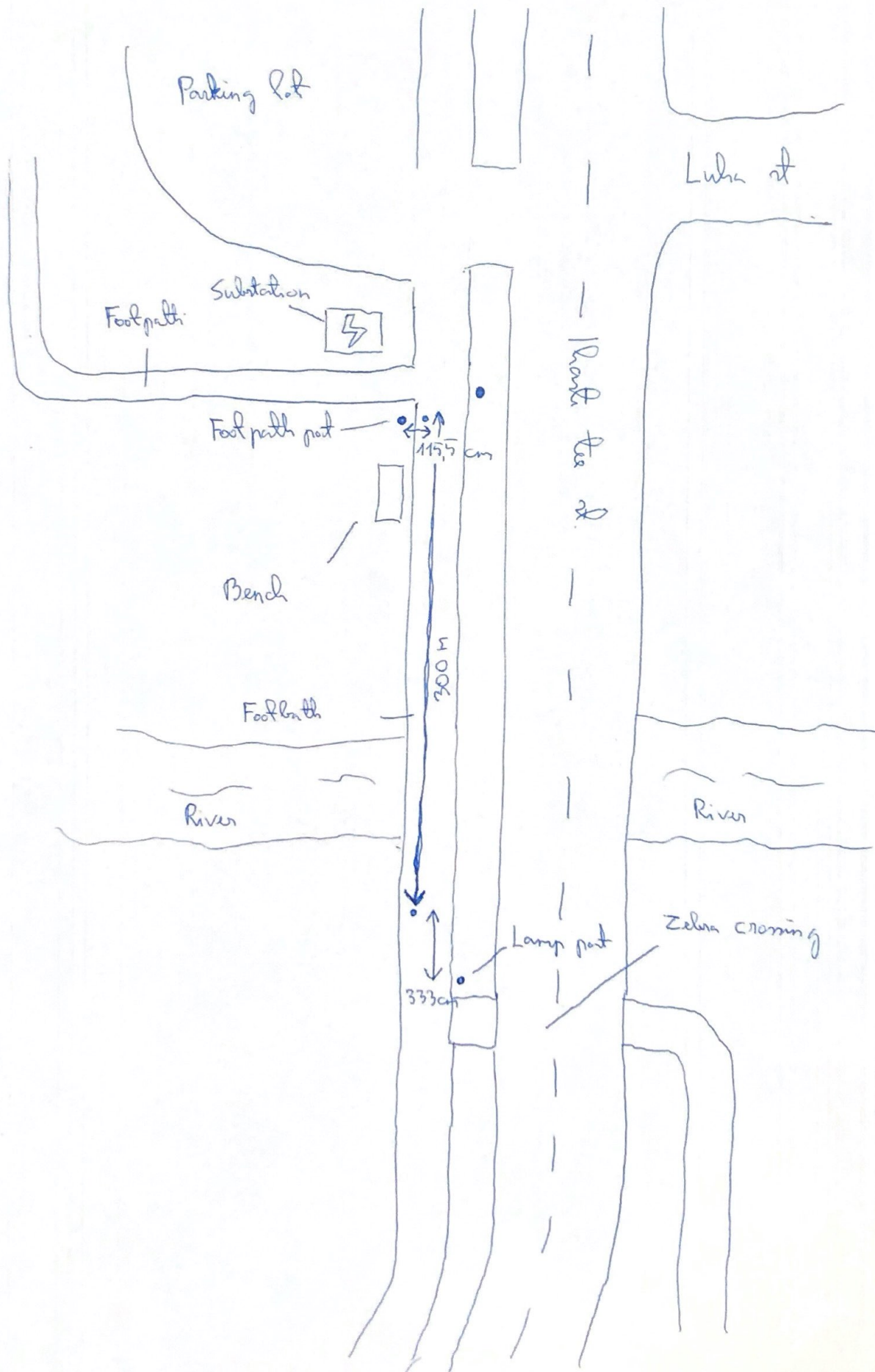
COURSE MEASUREMENT DATA SHEET

reading	counts	distance	adj.dist	location
---Measured running direction, 28.09.2020, $c = 10,95719624 \text{ m}$ ---				
805752	0	0.0m		START –
846965	41213	3761.3 m		P1 – bicycle road sign post at Turu bicycle road after zebra crossing
869767	64015	5842.3 m		P2 – bicycle road sign post at Ropka tee before zebra crossing
913656	107904	9847.8 m		P3 – lp post before zebra crossing after turn from Söpruse bridge
955848	150096	13698.4 m		P4 – bicycle road/ roadway intersection - curb
--- adjustment here adds 186 counts / $10,95719624 \text{ m} = 17 \text{ m}$ ---				
959812	154060	14060.2 m	14077.2 m	P5 – pedestrian/bicycle road sign post near Ujula st. 51
13690	207938	18977.3 m	18994.3 m	P6 – parking sign post at Lossi st. before right turn to park
36735	230983	21080.5m	21097.5 m	FINISH – manhole cover near Raekoja plats street door no. 13

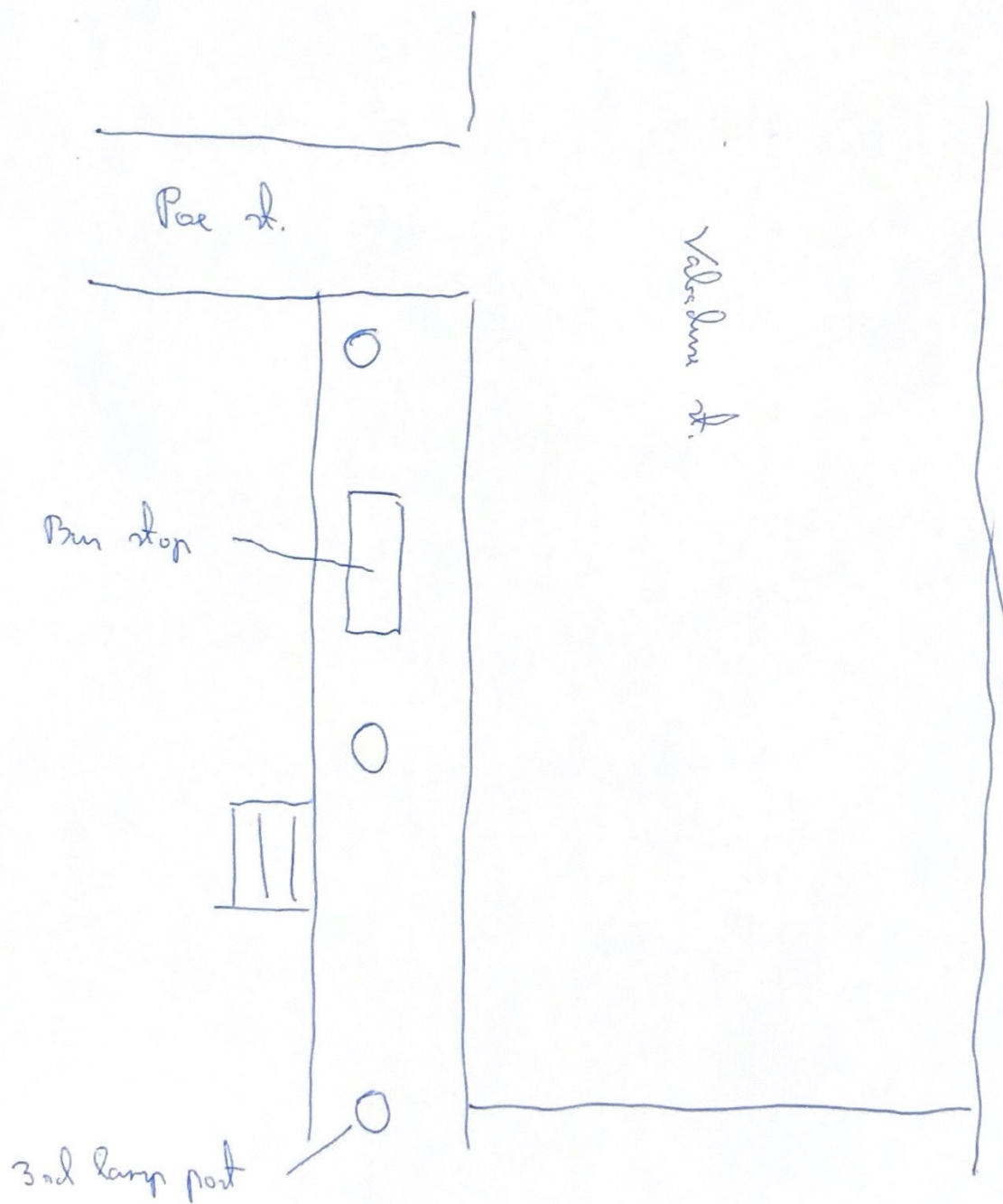
Note any adjustments made to the course after measurement:

Adjustment made at Ujula st U- turn (I moved already marked turnaround point 8.5 m further).





Start Line



FINISH LINE



A.Le Coq Sport spordimaja



Turnaround point is 1668 counts from P3

