

COURSE MEASUREMENT REPORT

Name of Event : Lokmat Nagpur MahaMarathon 2020

Advertised Road Distance : 3 km, 5 km, 10km & Half-Marathon (21.0975 km)

Race Date : 2nd February 2020

Race Director : Mr.Sanjay Patil

Address: c/o Lokmat Media Pvt. Ltd.
Lokmat Bhavan, Lokmat Square,
Pandit Jawaharlal Nehru Road,
Ramdaspath, Nagpur - 440010

Phone : +91- 9823144128

Name of Measurement team leader : Anirudha Athani

Address : Flat No.10, Rushiraj Presidency Apts,
D'Souza Colony, Nashik - 422005, Maharashtra, India

Phone : +91-9822069872

Location of Start : Opp University,
Mahatma Gandhi Road (Amravati Road),
Nagpur

Location of Finish : Same as Start

Type of Terrain : Tar Road & Concrete Road.
Mostly flat with one hill.

Type of Course : 3k, 5k & 10k = Out & Back
HM = Out and back (Petal Formation)

Altitude : (in Metres above Sea Level) 317m at Start/Finish

Distance between Start and Finish : NIL




Signed

Date : 29/01/2020

SUMMARY OF MEASUREMENTS

Dates of Measurement : 26th January 2019

How many measurements of the course were made : 2

Name of Measurer : Anirudha Athani

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

Left carriageway (in the OUT direction) is available for the entire length of the course for onward and returning runners.

One section of the 5/10/HM route viz. High court road does not have road divider. Likewise the Seminary hills road on the HM route. On these sections the left half of the road in the OUT direction is to be used by the runners.

If the route at turns cannot be described as the 'shortest possible route', explain what restrictions will apply, and how these would be enforced.

Route at turns is the shortest possible route.

Length of the course after any adjustment : Not less than 3 km, 5 km, 10 km & 21.0975 km.

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

The initial measurements were used to establish the final course length after the appropriate adjustment.

OVERVIEW OF THE MEASUREMENT PROCEDURE :

The course is measured using a calibrated bicycle fitted with a Jones Counter. The basis of the measurement is to compare the number of revolutions of the bicycle wheel (recorded in counts) needed to cover the race course with the number of revolutions needed to cover a standard 'calibration course' of known length.

The following steps were followed :

1. The team visited the University and discussed various alternatives for the start line location such as University ground, Internal road, etc and finally decided on the Main Road opp University.
2. A tentative Race course was defined after discussions with race director and the local management team.
3. Route recce was done by car on the tentative route, and it was found to have road works in progress in the Futala lake area.
4. An alternative route was discussed and once again route recce was done in the car. This route was found to be suitable.
5. For the calibration course the start point itself was found eminently suitable, being flat and straight.
6. The bicycle was calibrated on the calibration course late at night after peak traffic had subsided.
7. The measurement was started from the start point and bicycle was ridden on the entire half marathon route.
8. Tentative turn-around points were marked for each distance.
9. Post-calibration of the bicycle was done on the calibration course. There was a slight difference between the working constant and the Finish Constant, so the average of the two was considered as 'Constant for the Day'
10. Adjustment was done for the tentative U-turn points and final u-turn points were marked along with distances from fixed points of reference such as lamp posts and trees on the road.
11. The measurement was documented.

DETAILS OF THE CALIBRATION COURSE

1. Name of Event: Lokmat Nagpur MahaMarathon 2020
2. City/Town : Nagpur, Maharashtra State, India
3. Location of Calibration Course:
Flat and Straight section of Mahatma Gandhi Road (Amravati Road) between University and Law College Chowk.
4. Length of Calibration Course: 300 m
5. Dates Measured : 21st January 2020
6. Method used to measure calibration course: Steel Tape
7. How many times did you measure the calibration course: 2
8. Measurement team Leader : Anirudha Athani
9. Address of Team Leader : Nashik, Maharashtra, India
10. Phone Number of Team Leader : +91-9822069872
11. Email Address of team leader: athani@live.com
12. List name and Duties of Team Members:
 - i. Mr. Avinash Patrange } General Assistance and
 - ii. Mr. Sanjay Dhawande } Marking the points with Spray paint
 - iii. Mr. Anil Katwale. (Driver)
13. Is the Calibration course straight : Yes.
14. How are the start and finish points marked : Steel Nails & Paint
15. Are the start and finish points located in a road where the bicycle wheel can touch them or elsewhere :

Yes. The start/finish points are located on the straght road where bicycle wheel can touch them.
16. Bicycle check : This is a check against miscounting the number of tape lengths. (in case you use a gross measurement check other than a bicycle, please explain). Checked using GPS watch

A. Counts for full calibration course: 300m

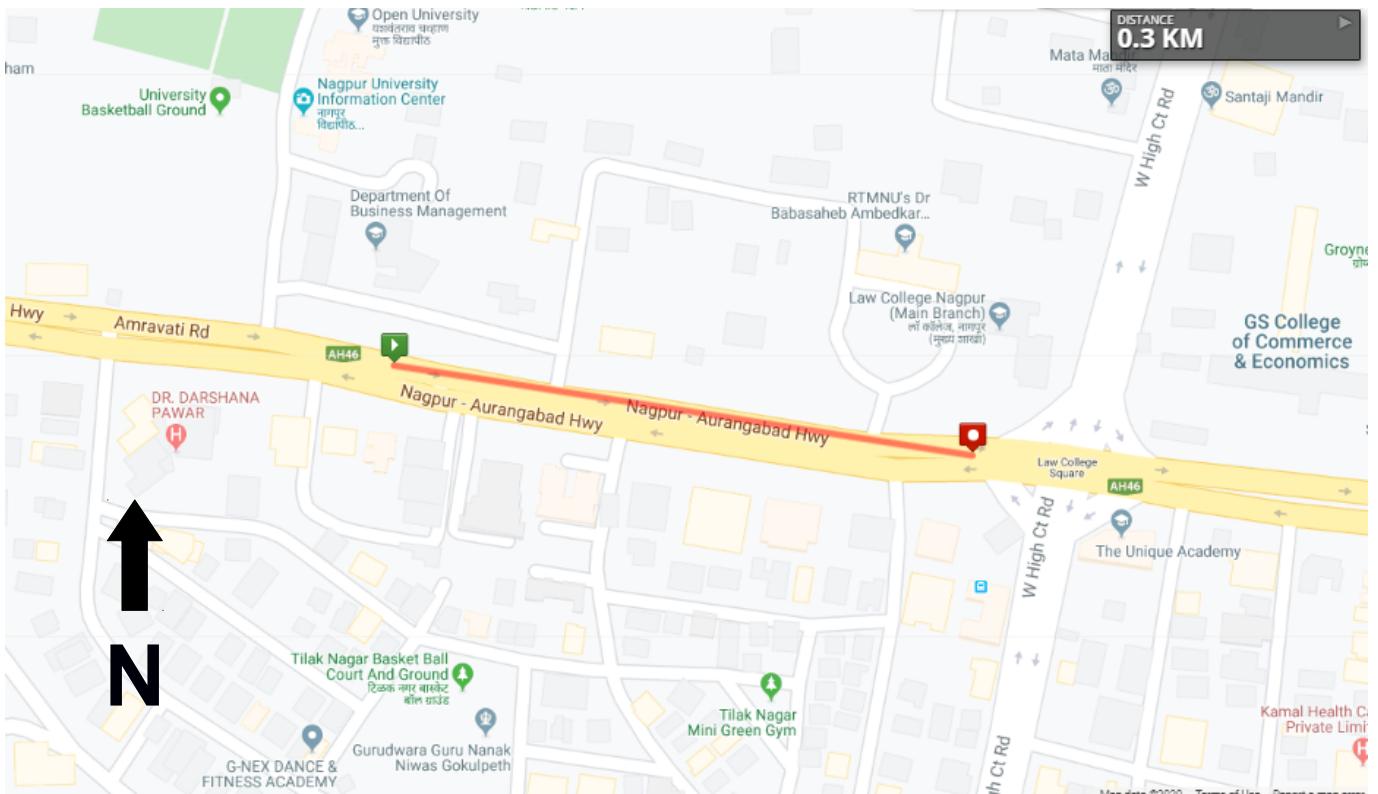
B. Counts for one tape length : 50m

C. Divide A by B

D Number of full tape lengths : 6

17. Submit a map of this calibration course, showing direction of north, the name of the road, (and relevant cross streets), and the exact location of the start and finish points, including taped distances from the nearby permanent locations.

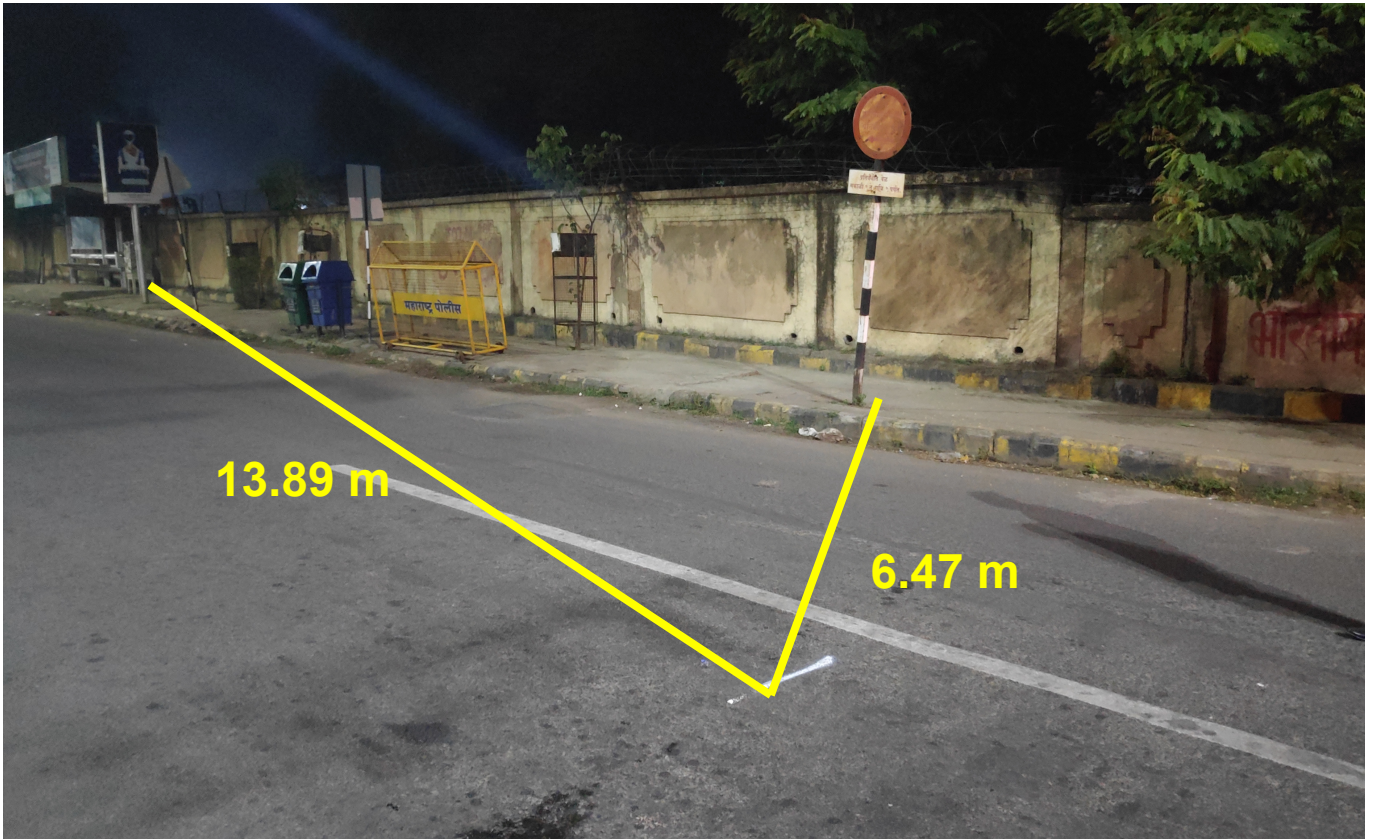
Map location of Calibration Course



Calibration Start Point



Calibration End Point



STEEL TAPING DATA SHEET
For measuring a calibration course

Name of Calibration Course : Amravati Road, Between University and Law College Square

City/Town and State : Nagpur, Maharashtra, INDIA

Date : 21st January 2020

Start Time : 0015 hours

Finish Time : 0100 hours

Pavement Temperature : Start 17° C

Finish 17° C

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

6	x 50m	+ 0	=	300m
# tape	distance per	partial		measured tape
lengths	tape length	tape lengths		lengths

2. Second Measurement : This checks the measurement to the finish point using a 50 cm offset from the start point.

5	x 50m	+ 49.5	=	249.5m
# tape	distance per	partial		measured tape
lengths	tape length	tape lengths		lengths

3. Average raw (Uncorrected) measurement of the course = 300m

4. Temperature correction :

$$\begin{aligned} \text{Correction factor} &= 1.0000000 + (0.0000116 \times [\text{Celsius Temperature} - 20]) \\ &= 1.0000000 + (0.0000116 \times [17 - 20]) \\ &= 0.9999652 \end{aligned}$$

5. Multiply the temperature correction factor with the average raw measurement of the course

0.9999652	x	300m	=	299.98956 m
correction factor		average raw measurement		corrected measurement

Final (adjusted) length of the calibration course = 299.99304 m

BICYCLE CALIBRATION DATA SHEET

Name of Event : Lokmat Nagpur MahaMarathon 2020

Date of Measurement : 21st January 2020

Name of Measurer : Anirudha Athani

Length of Calibration Course : 299.98956 m

PRE CALIBRATION – Ride the Calibration Course four times, recording data as follows :

Ride	Start Count	Finish Count	Difference
1	242400	245569	3169
2	245569	248738	3169
3	248738	251907	3169
4	251907	255076	3169

Time of the Day : 0100 on 21st January 2020

Temperature: 17°C

WORKING CONSTANT = number of counts in one kilometre calculated from the pre measurement average count, and multiplied by 1.001.

Pre measurement Average count = (3169 + 3169 + 3169 + 3169)/4 = 3169

Counts/km = Pre measurement average count x 1000/length of calibration course
= 3169 x 1000/ 299.98956
= 10563.701

Working Constant = counts per km x 1.001
= 10563.701 x 1.001
= 10574.2647

POST CALIBRATION – Ride the Calibration Course four times, recording data as follows :

Ride	Start Count	Finish Count	Difference
1	486131	489301	3170
2	489301	492471	3170
3	492471	495641	3170
4	495641	488881	3170

Time of the Day : 0430 on 21st January 2020

Temperature: 14°C

FINISH CONSTANT = number of counts in one kilometre calculated from the Post-measurement average count, and multiplied by 1.001

Post-measurement Average count = (3170 + 3170 + 3170 + 3170)/4 = 3170

Counts/km = Pre measurement average count x 1000/length of calibration course
= 3170 x 1000/ 299.98956
= 10567.0344

Finish Constant = counts per km x 1.001
= 10567.0344 x 1.001
= 10577.6014

CONSTANT FOR THE DAY = The average of the working constant and the finish constant
= (10574.2647 + 10577.6014)/2
= 10575.9331 per km

MEASUREMENT DATA:**A. HALF-MARATHON & 10K ROUTE**

Location	Counter Reading	Cumulative Counts	Distance from start in metres	Adjustment in metres
START opp Pragyan classes/ Indian Overseas Bank, Opp University on Amravati Road	261500	0	0	
Amravati Road, near Law College Square	263615	2115	199.98235	
Opp Jawahar Vidyarthi Gruha, West High Court Road	266788	5288	500.00316	
Opp Divisional Railway Manager Bungalow, West High Court Road	272074	10574	999.81722	
Tentative U-turn point for 3 km. Opp Commissioner of Police Bungalow, West High Court Road	277632	15861	1499.72583	Adjusted U-turn point outwards by 0.27418m
Padmashree Rafi Chowk Signal, West High Court (South) Turn off point for 5k & 10k runners)	278966	17466	1651.48548	
Padmashree Rafi Chowk Signal, West High Court Road (North)	279368	17868	1689.49631	
Japanese Garden Signal, Centre of the Road	282649	21149	1999.72899	
Opp Centre Point School, Seminary Hills Road	293223	31723	2999.54621	
Opp Transit Treatment Centre, Vana Vibhag Nagpur, Seminary Hills Road	303797	42297	3999.36342	
Passport Office Chowk, Seminary Hills Road	314371	52871	4999.18064	
U-Turn Point Opp Mama Bhanja Maggi Centre, Near Airforce Head Quarters, Seminary Hills Road	324946	63446	5999.09241	Adjusted u-turn point outwards by 0.90759m to make it 6000m. So all further points get adjusted by 1.81518 m
Padmashree Rafi Chowk Signal, West High Court	370506	109006	10306.98653 +1.81518	
Vibhageeya Ayukta Karyalay, East High Court Road	377817	116317	10998.27305 +1.81518	
Opp Transformer, after Bhole	388391	126891	11998.09027	

Petrol Pump, East High Court Road			+1.81518	
Transformer/Red Distribution Box Opp Central Mall, East High Court Road	398965	137465	12997.90748 +1.81518	
Opp Dr.Ambedkar Smarak, Deekshabhoomi.	409540	148040	13997.81926 +1.81518	
Neeri T-point	419530	158030	14942.41676 +1.81518	Adjusted inwards by 72.0716m
Padmashri Mohd Rafi Chowk Signal	468639	207139	19585.88411 +1.81518- 144.1432	
Finish Line Opp University, Amravati Road	486131	224631	21239.82800 +1.81518- 144.1432 = 21097.500 m	

B. 5KM & 10 KM

Location	Counter Reading	Cumulative Counts	Distance from start in metres	Adjustment in metres
Padmashree Rafi Chowk Signal, West High Court	370506	0	1651.48548 + 0	
Opp GST Bhawan, East High Court Road	374189	3683	1651.48548 + 348.24350	
Tentative U-turn point for 5 km. Opp Anil Deshmukh Resi/ Yes Bank, East High Court Road.	379476	8970	1651.48548+848.1 5211	Adjusted outwards by 0.36241m
Opp Civil Defense College, East High Court Road	384763	14257	1651.48548+1348. 06072	
Opp Traffic Park, East High Court Road	395338	24832	1651.48548+2347. 97249	
Tentative U-Turn for 10 km. Before Metro Bhavan, Kachepura, East High Court Road	405912	35406	1651.48548+3347. .8971	Adjusted outwards by 0.62384 m

C. RETURN DIRECTION 10K U-TURN POINT TO FINISH LINE

Tentative U-Turn for 10 km. Before Metro Bhavan, Kachepura, East High Court Road	433258	0	0	Return Direction
Finish Line Opp University, Amravati Road	486131	52873	4999.39957	

1. 3 km course:

Desired Length of Course : 3000.000 m

Length of Course as measured :

A. Start Point to U-turn point : 1499.72583 m

B. U-turn point to finish : 1499.72583 m

Length of course as measured : 2999.45166 m

Note any adjustments made to the course after measurement : 0.27418 m outwards

Final Length of course = 3000.00002 m

2. **5km Course :**

Desired Length of Course : 5000.000 m

Length of Course as measured :

A. Start Point to U-turn point : 2499.63759 m

B. U-turn point to finish : 2499.63759 m

Length of course as measured : 4999.27518 m

Note any adjustments made to the course after measurement : 0.36241 m OUTWARDS

Final Length of course = 5000.0000 m

3. **10km Course:**

Desired Length of Course : 10000.000 m

A. Start Point to Padmashri Mohd Rafi Chowk turn-off : 1651.48548 m

B. Padmashri Mohd Rafi Chowk Turn-off to U-Turn Point : 3347.8971 m

C. U-Turn Point to Finish Line in Return Direction : 4999.36975 m

Total Length of the course as measured : 9998.75233 m

Note any adjustments made to the course after measurement : 0.62384 m

Final length of course : 10000.0000 m

4. **Half Marathon Course:**

Desired Length of course : 21097.500 m

Length of the course as measured : 21239.82800 m

Note any adjustments made to the course after measurement :

a. Adjusted u-turn point outwards by 0.90759m to make it 6000m. So distance increases by 1.81518 m

b. Adjusted Neeri t-point u-turn point by inwards by 72.0716m. So distance reduces by 144.1432 m

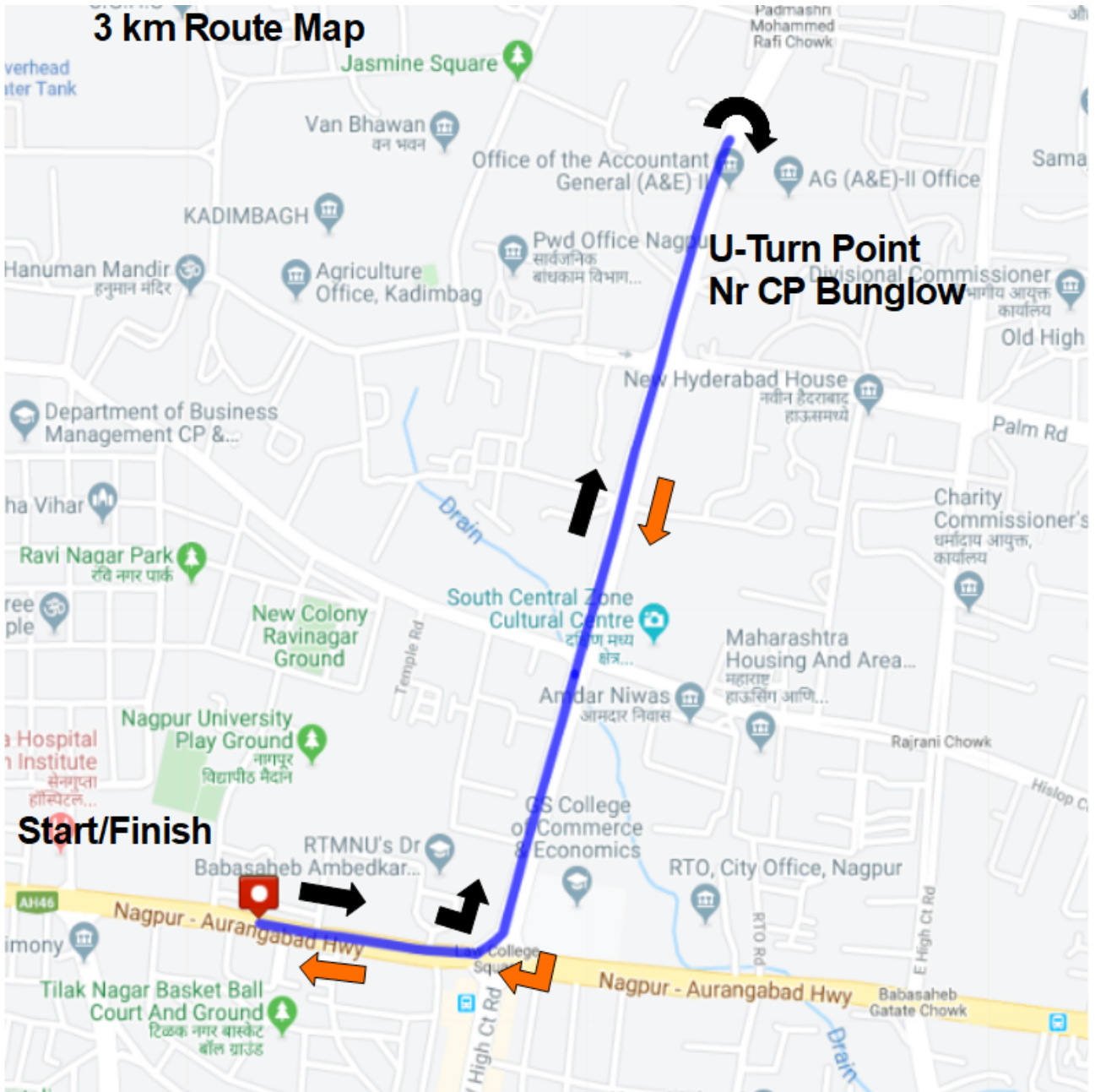
Final length of course : 21097.5 m

LOCATION OF START/FINISH LINE

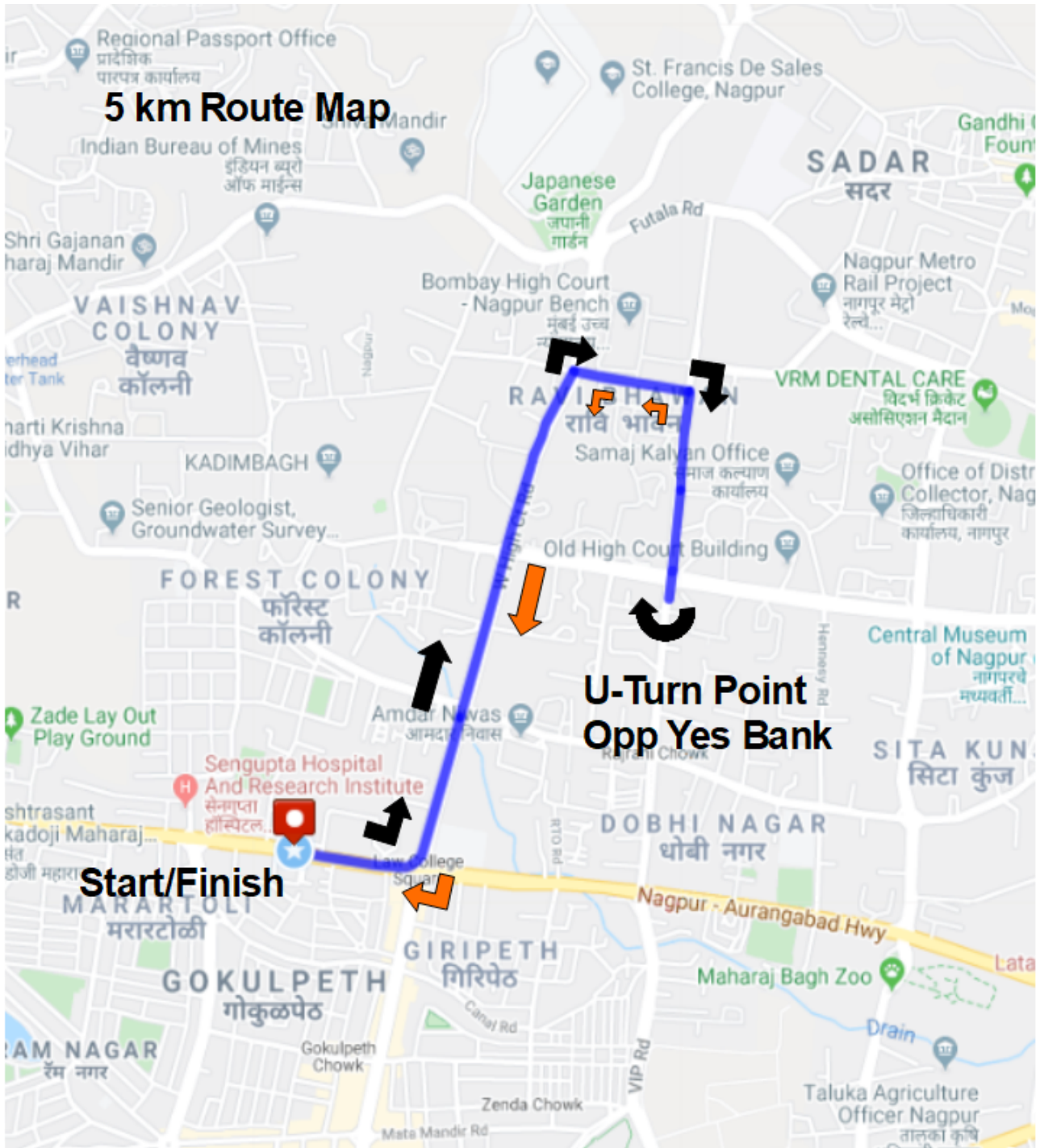
In front of Pragmaan classes board/Indian Overseas Bank Opp University, Left Carriageway travelling towards Law College Square on Mahatma Gandhi Road (Amravati Road).



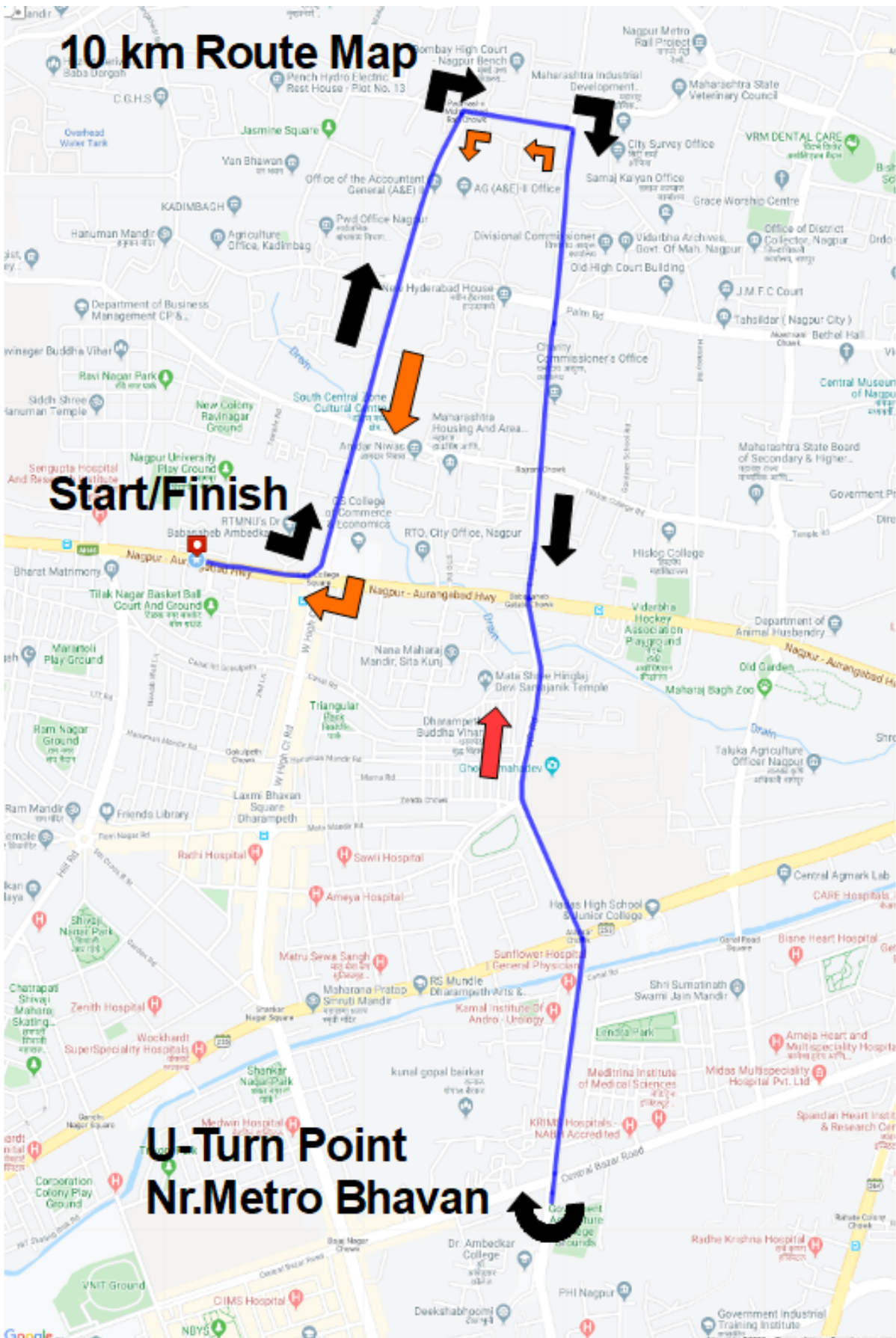
ROUTE MAP FOR 3 KM



ROUTE MAP FOR 5 KM



ROUTE MAP FOR 10 KM



ROUTE MAP FOR HALF-MARATHON



3 km & Half-Marathon Route Markers

Distance	Location
Start Point	Opp Pragyana classes/ Indian Overseas Bank, Opp University on Amravati Road
1 km	Opp Divisional Railway Manager Bungalow, West High Court Road
1.5 km (U-Turn Point for 3 km)	Opp Commissioner of Police Bungalow, West High Court Road
2 km	Japanese Garden Signal, Centre of the Road
3 km	Opp Centre Point School, Seminary Hills Road
4 km	Opp Transit Treatment Centre, Vana Vibhag Nagpur, Seminary Hills Road
5 km	Passport Office Chowk, Seminary Hills Road
6 km (1 st U-turn pt for HM)	Opp Mama Bhanja Maggi Centre, Near Airforce Head Quarters, Seminary Hills Road
7 km	Passport Office Chowk, Seminary Hills Road
8 km	Opp Transit Treatment Centre, Vana Vibhag Nagpur, Seminary Hills Road
9 km	Opp Centre Point School, Seminary Hills Road
10 km	Japanese Garden Signal, Centre of the Road
11 km	Vibhageeya Ayukta Karyalay, East High Court Road
12km	Opp Transformer, after Bhole Petrol Pump, East High Court Road
13 km	Transformer/Red Distribution Box Opp Central Mall, East High Court Road
14 km	Opp Dr.Ambedkar Smarak, Deekshabhoomi.
14.870 km (2 nd U-turn pt for HM)	Near Neeri Colony Gate, East High Court Road
15 km	Near Neeri Colony Board, East High Court Road
16 km	Opp Metro Bhavan Gate, East High Court Road
17 km	Opp International Hostel Funded by ICAR, East High Court Road
18 km	Opp Vasantnao Naik Agri Ext Mgmt Trg Institute, East High Court Road
19 km	Opp. Office of the Accountant General (A&E) II , East High Court Road
20 km	Opp Ladies Club, West High Court Road
1 km to go	Opp Divisional Railway Manager Bungalow, West High Court Road
500m to go	Opp Jawahar Vidyarthi Gruha, West High Court Road
200m to go	Amravati Road, near Law College Square
Finish	Opp Pragyana classes/ Indian Overseas Bank, Opp University on Amravati Road

5 km & 10 km Route Markers

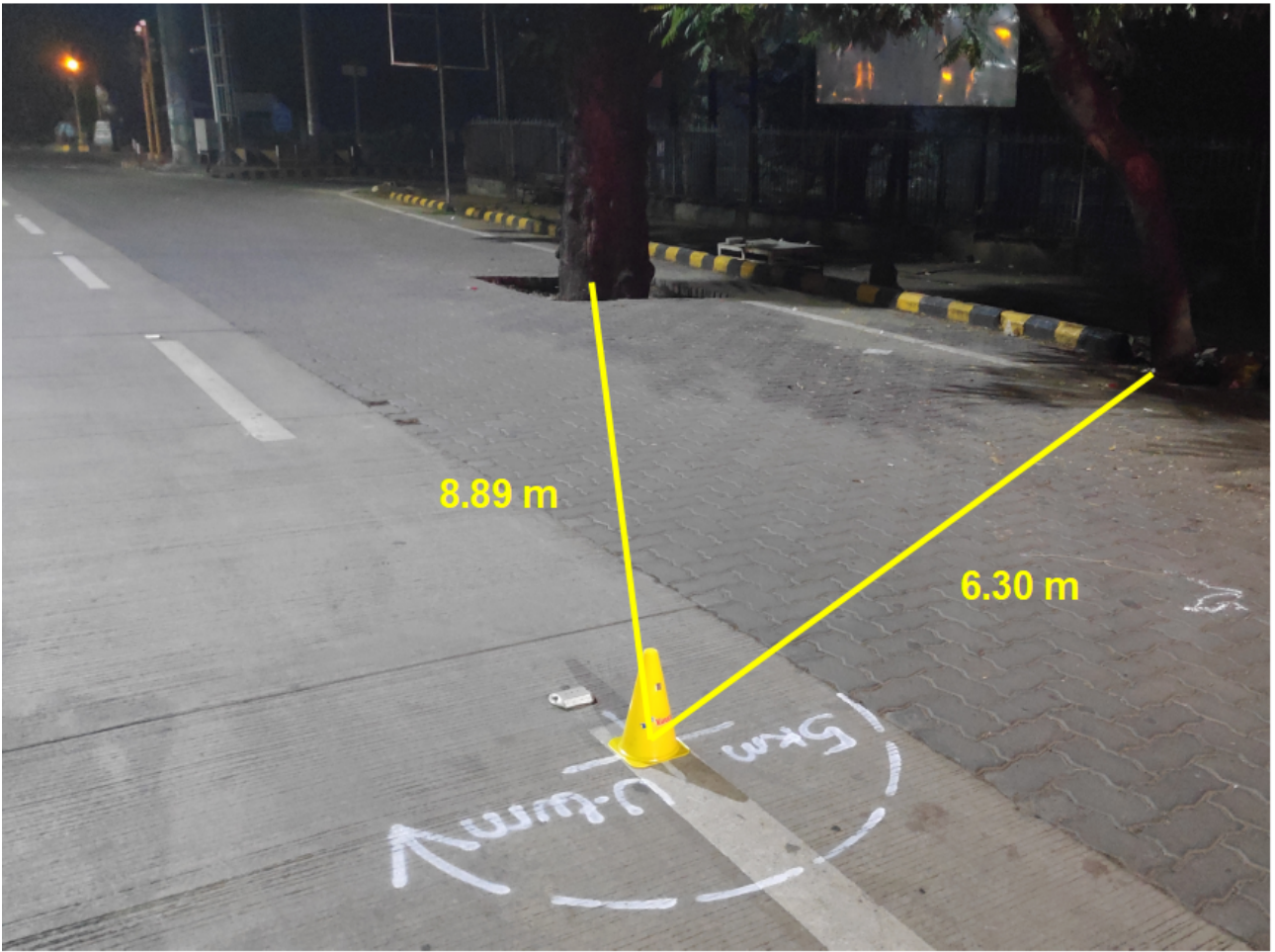
Distance	Location
Start Point	Opp Pragyana classes/ Indian Overseas Bank, Opp University on Amravati Road
1 km	Opp Divisional Railway Manager Bungalow, West High Court Road
2 km	Opp GST Bhavan, East High Court Road
2.5 km (U-turn for 5 km)	Opp Anil Deshmukh Residence / Yes Bank, East High Court Road
3 km (for 10 km)	Opp Civil Defense College, East High Court Road
4 km (for 10 km)	Opp Traffic Park, East High Court Road
5 km (U-turn for 10 km)	Before Metro Office, Kachepura, East High Court Road
6 km (for 10 km)	Opp Traffic Park, East High Court Road
7 km (for 10 km)	Opp Civil Defense College, East High Court Road
8 km for 10 km/ 3 km for 5 km	Opp GST Bhavan, East High Court Road
1 km to go	Opp Divisional Railway Manager Bungalow, West High Court Road
500m to go	Opp Jawahar Vidyarthi Gruha, West High Court Road
200m to go	Amravati Road, near Law College Square
Finish	Opp Pragyana classes/ Indian Overseas Bank, Opp University on Amravati Road

PHOTOGRAPHS

U-TURN FOR 3 KM



U-TURN FOR 5 KM



U-TURN FOR 10 KM



U-TURN FOR HM NEAR AIRFORCE HQ



U-TURN NEAR NEERI GATE FOR HM

