

CHAPTER 7

TRAIN OPERATION PLAN



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Chapter - 7

TRAIN OPERATION PLAN

7.1 Operation Philosophy

The underlying operation philosophy is to make the MRT System more attractive and economical, the main features being:

- Selecting the most optimum frequency of Train services to meet sectional capacity requirement during peak hours on most of the sections.
- Economical & optimum train service frequency not only during peak period, but also during off-peak period.
- A short train consists of 3 coaches.
- Multi-tasking of train operation and maintenance staff.

7.2 Stations

List of stations for the two Corridors of Nagpur Metro are given below:-

TABLE :7.1 : STATIONS

LINE-1 : NORTH-SOUTH CORRIDOR				
S. No	Name of Station	Chainage (in m)	Inter – Station Distance (in m)	Remarks
	DEAD END	-145.00		
1	AUTOMOTIVE SQRE	0.0	408.2	Elevated
2	NARI ROAD	975.8	975.8	Elevated
3	INDORA CHOWK	2139.7	1163.9	Elevated
4	KADVI CHOWK	3181.2	1041.5	Elevated
5	GADDI GODAM SQRE	4399.0	1217.8	Elevated
6	KASTURCHAND PARK	5148.6	749.6	Elevated
7	ZERO MILE	6175.5	1026.9	Elevated
8	SITABURDI	6709.2	533.7	Elevated
9	CONGRESS NAGAR	7897.2	1188.0	Elevated



LINE-1 : NORTH-SOUTH CORRIDOR				
S. No	Name of Station	Chainage (in m)	Inter – Station Distance (in m)	Remarks
10	RAHATE COLONY	8682.6	785.4	Elevated
11	AJNI SQUARE	10104.7	1422.1	Elevated
12	CHHATRAPATI SQUARE	11146.3	1041.6	Elevated
13	JAIPRAKASH NAGAR	11811.5	661.1	Elevated
14	UJWAL NAGAR	12846.6	1069.2	Elevated
15	AIRPORT	13784.9	1344.1	Elevated
16	NEW AIRPORT	16184.4	2783.1	At Grade
17	KHAPARI	18460.6	2117.9	At Grade
	DEAD END	19250.0		

LINE-2 : EAST-WEST CORRIDOR				
S. No	Name of Station	Chainage (in m)	Inter – Station Distance (in m)	Remarks
	DEAD END	-392.0		
1	PRAJAPATI NAGAR	0.0		Elevated
2	VAISHNO DEVI CHOWK	1229.3	1229.3	Elevated
3	AMBEDKAR CHOWK	1947.9	718.6	Elevated
4	TELEPHONE EXCHANGE	3137.4	1189.5	Elevated
5	CHITAR OLI CHOWK(GANDHI PUTALA)	3949.7	812.3	Elevated
6	AGRASEN CHOWK	4759.2	809.5	Elevated
7	DOSAR VAISYA CHOWK(MAYO HOSPITAL)	5611.0	851.8	Elevated
8	NAGPUR RAILWAY STATION	6464.4	853.4	Elevated
9	SITABURDI	7707.7	1243.3	Elevated
10	JHANSI RANI SQRE	8353.7	646.0	Elevated
11	INSTITUTIONS OF ENGINEERS	9117.2	763.5	Elevated
12	SHANKAR NAGAR SQRE(BANK OF INDIA)	10074.9	957.7	Elevated
13	LAD CHOWK	10873.1	798.2	Elevated
14	DHARAMPETH COLLEGE	12020.7	1147.6	Elevated
15	SUBHASH NAGAR	12947.1	926.4	Elevated
16	RACHANA (RING RD JNC)	14188.9	1241.8	Elevated
17	VASUDEV NAGAR	15173.9	985.0	Elevated
18	BANSI NAGAR	16131.6	957.7	Elevated



LINE-2 : EAST-WEST CORRIDOR				
S. No	Name of Station	Chainage (in m)	Inter – Station Distance (in m)	Remarks
19	LOKMANYA NAGAR	17424.1	1292.5	Elevated
	DEAD END	18165.0		

7.3 TRAIN OPERATION PLAN :

7.3.1 Salient Features

- Running of services for 19 hours of the day (5 AM to Midnight) with a station dwell time of 30 seconds,
- Make up time of 5-10% with 8-12% coasting.
- Scheduled speed for these corridors has been assumed as:

Line-1: North – South Corridor

- 'Automotive Sqre to Congress Nagar' section: 32 kmph
- 'Congress Nagar to Khapri Station' section: 34 kmph

Line-2: East-West Corridor

- 'Prajapati Nagar to Lokmanya Nagar' section: 30 kmph
- 'Agrasen Chowk to Subhash Nagar' section: 30 kmph

7.3.2 Traffic Demand

Peak hour peak direction traffic demands (PHPDT) for the Nagpur Metro 'Line-1: North-South Corridor' & 'Line-2: East- West Corridor' for the year 2016, 2021, 2026, 2031, 2036 and 2041 for the purpose of planning are indicated in Attachment I/A1, B1 & C1, D1, E1, F1, Attachment I/A2, B2, C2, D2, E2, & F2 respectively.

7.3.3 Train formation

To meet the above projected traffic demand, the possibility of running trains with composition of 3 cars with different headway has been examined.

Composition

DMC : Driving Motor Car

TC : Trailer Car

Capacity (@ 6 passengers per square meter of standee area)

Driving Motor Car (DMC) - 247 (43 seated + 204 standing)

Trailer Car (TC) - 270 (50 seated + 220 standing)

3 Car Train - 764 (136 seated + 628 standing)



7.3.4 Train Operation Plan

Based on the projected PHPDT demand, Train operation plan with train carrying capacity @ 6 persons per square meter of standee area for the Nagpur Metro 'Line 1: North-South Corridor' & 'Line 2: East West Corridor' for the year 2016, 2021, 2026, 2031, 2036 and 2041 are given below:

7.3.4.1 Line-1: North –South Corridor

Train Operation Plan for Line 1: North-South Corridor has been planned in such a way that there are two loops of train operation. In one loop, trains run from 'Automotive Sqre to Congress Nagar' at a given headway and in other loop trains run from 'Automotive Sqre to Khapri Station' at the same headway, thus resulting in half the headway in 'Automotive Sqre to Congress Nagar' Section as compared to 'Congress Nagar to Khapri Station' Section. For this Train Operation Plan, reversal facility is required at Congress Nagar.

i) Year 2016:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 12 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 12 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/A1)

- 6 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 7640 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 9730 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 10089 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 8272 to 2561 only. The planned capacity of 7640 (9730 under dense loading) is less than the PHPDT demand in two (one, with dense loading capacity) sections out of eight sections.

(b) 'Congress Nagar to Khapri Station' Section (Refer Attachment I/A1)

- 12 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 3820 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 4865 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 5288 is in the Section between Congress Nagar to Rahate Colony and demand in the remaining sections is in the range of 4513 to 2140 only. The planned capacity of 3820 (4865 under dense



loading) is less than the PHPDT demand in two (one, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor in the year 2016 is tabulated and represented on a chart enclosed as Attachment I/A1.

ii) Year 2021:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 10 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 10 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/B1)

- 5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 9168 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 11676 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 10936 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 9225 to 3010 only. The planned capacity of 9168 (11676 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

(b) 'Congress Nagar to Khapri Station' Section (Refer Attachment I/B1)

- 10 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 4584 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 5838 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 5728 is in the Section between Congress Nagar to Rahate Colony and demand in the remaining sections is in the range of 4876 to 2267 only. The planned capacity of 4584 (5838 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor in the year 2021 is tabulated and represented on a chart enclosed as Attachment I/B1.

iii) Year 2026:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 9 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 9 min headway with 3-Car train. This results in following train operation in different section:



(a) 'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/C1)

- 4.5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 10187 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 12973 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 1195 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 10297 to 3453 only. The planned capacity of 10187 (12973 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

(b) 'Congress Nagar to Khapri Station' Section (Refer Attachment I/C1)

- 9 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 5093 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 6487 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 6305 is in the Section between Congress Nagar to Rahate Colony and demand in the remaining sections is in the range of 5338 to 2489 only. The planned capacity of 5093 (6487 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor in the year 2021 is tabulated and represented on a chart enclosed as Attachment I/C1.

iv) Year 2031:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 8 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 8 min headway with 3-Car train. This results in following train operation in different section:

7. 'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/D1)

- 4 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 11460 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 14595 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 12934 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 11631



to 4045 only. The planned capacity of 11460 (14595 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

(b) 'Congress Nagar to Khapri Station' Section (Refer Attachment I/D1)

- 8 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 5730 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 7298 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 6918 is in the Section between Congress Nagar to Rahate Colony and demand in the remaining sections is in the range of 5854 to 2748 only. The planned capacity of 5730 (7298 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor in the year 2031 is tabulated and represented on a chart enclosed as Attachment I/D1.

v) Year 2036:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 7 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 7 min headway with 3-Car train. This results in following train operation in different section:

(a)'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/E1)

- 3.5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 13097 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 16680 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 14286 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 13002 to 4611 only. The planned capacity of 13097 (16680 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of eight sections.

(b)'Congress Nagar to Khapri Station' Section (Refer Attachment I/E1)

- 7 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 6549 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 8340 @ 8 persons per square meter of standee area under dense loading conditions.



- The maximum PHPDT demand of 7688 is in the Section between Congress nagar to Rahate Colony and demand in the remaining sections is in the range of 6476 to 3049 only. The planned capacity of 6549 (8340 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor is the year 2036 is tabulated and represented on a chart enclosed as Attachment I/E 1.

vi) Year 2041:

Train operation in 'Automotive Sqre to Congress Nagar' Loop at 6 min headway with 3-Car train and in 'Automotive Sqre to Khapri Station' Loop at 6 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Automotive Sqre to Congress Nagar' Section (Refer Attachment I/F1)

- 3 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 15280 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 19460 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 15729 is in the Section between Sitaburdi to Congress Nagar and demand in the remaining sections is in the range of 14572 to 5274 only. The planned capacity of 15280 (19460 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of eight sections.

(b) 'Congress Nagar to Khapri Station' Section (Refer Attachment I/F1)

- 6min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 7640 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 9730 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 8477 is in the Section between Congress nagar to Rahate Colony and demand in the remaining sections is in the range of 7149 to 3660 only. The planned capacity of 7640 (9730 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of eight sections.

Traffic demand and train capacity for this corridor is the year 2041 is tabulated and represented on a chart enclosed as Attachment I/F1



7.3.4.2 Line-2: East –West Corridor

Train Operation Plan for Line 2: East-west Corridor has been planned in such a way that there are two loops of train operation. In one loop, trains run from 'Prajapati Nagar to Lokmanya Nagar' at a given headway and in other loop trains run from 'Agrasen Chowk to Subhash Nagar' at the same headway, thus resulting in half the headway in 'Agrasen Chowk to Subhash Nagar' Section as compared to 'Prajapati Nagar to Agrasen Chowk' Section & 'Subhash Nagar to Lokmanya Nagar' Section. For this Train Operation Plan, reversal facilities are required at Agrasen Chowk and Subhash Nagar'.

i) Year 2016:

Train operation in 'Prajapati Nagar to Lokmanya Nagar' Loop at 13 min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 13 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/A2)

- 13 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 3526 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 4491 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 4090 is in the Section between Chitar Oli Chowk (Gandhi Putala) to Agrasen Chowk and demand in the remaining sections is in the range of 3787 to 481 only. The planned capacity of 3526 (4491 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) out of nine sections sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section.

(b) 'Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/A2)

- 6.5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 7052 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 8982 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 7746 is in the Section between Institute of Engineers to Shankar Nagar Square and demand in the remaining sections is in the range of 7341 to 4072 only. The planned capacity of 7052 (8982 under dense loading) is less than the PHPDT demand in two (zero, with dense



loading capacity) sections out of nine sections of 'Agrasen Chowk to Subhash Nagar' Section.

Traffic demand and train capacity for this corridor in the year 2016 is tabulated and represented on a chart enclosed as Attachment I/A2.

ii) Year 2021:

Train operation in 'Prajapati Nagar to Lokmanya Nagar' Loop at 12 min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 12 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/B2)

- 12 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 3820 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 4865 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 4356 is in the Section between Chitar Oli Chowk (Gandhi Putala) to Agrasen Chowk and demand in the remaining sections is in the range of 4157 to 517 only. The planned capacity of 3820 (4865 under dense loading) is less than the PHPDT demand in two (zero, with dense loading capacity) out of nine sections sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section.

(b) 'Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/B2)

- 6 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 7640 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 9730 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 8460 is in the Section between Institute of Engineers to Shankar Nagar Square and demand in the remaining sections is in the range of 7970 to 4472 only. The planned capacity of 7640 (9730 under dense loading) is less than the PHPDT demand in two (zero, with dense



loading capacity) sections out of nine sections of 'Agrasen Chowk to Subhash Nagar' Section.

Traffic demand and train capacity for this corridor in the year 2021 is tabulated and represented on a chart enclosed as Attachment I/B2.

iii) Year 2026:

Train operation in 'Parjapati Nagar to Lokmanya Nagar' Loop at 10min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 10_min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/C2)

- 10 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 4584 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 5838 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 4703 is in the Section between Chitar oli Chowk (Gandhi Putala) to Agrasen Chowk and demand in the remaining sections is in the range of 4530 to 549 only. The planned capacity of 4584 (5838 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) out of nine sections sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section.

(b) 'Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/C2)

- 5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 9168 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 11676 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 9154 is in the Section between Institute of Engineers to Shankar Nagar Square and demand in the remaining sections is in the range of 8754 to 4870 only. The planned capacity of 9168 (11676 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of nine sections of 'Agrasen Chowk to Subhash Nagar' Section.



Traffic demand and train capacity for this corridor in the year 2026 is tabulated and represented on a chart enclosed as Attachment I/C2.

iv) Year 2031:

Train operation in 'Prajapati Nagar to Lokmanya Nagar' Loop at 9 min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 9 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/D2)

- 9 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 5093 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 6487 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 5094 is in the Section between Chitar oli Chowk (Gandhi Putala) to Agrasen chowk and demand in the remaining sections is in the range of 4934 to 585 only. The planned capacity of 5093 (6487 under dense loading) is less than the PHPDT demand in one (zero, with dense loading capacity) sections out of nine sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Sections.

(b) 'Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/D2)

- 4.5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 10187 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 12973 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 9906 is in the Section between Institute of Engineers to Shankar Nagar Square and demand in the remaining sections is in the range of 9675 to 5301 only. The planned capacity of 10187 (12973 under dense loading) is more than the PHPDT demand in nine sections of 'Agrasen Chowk to Subhash Nagar' Sections.

Traffic demand and train capacity for this corridor in the year 2031 is tabulated and represented on a chart enclosed as Attachment I/D2.

**v) Year 2036:**

Train operation in 'Parjapati Nagar to Lokmanya Nagar' Loop at 8 min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 8 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/E2)

- 8 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 5730 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 7298 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 5542 is in the Section between Chitar oli Chowk (Gandhi putala) to Agrasen Chowk and demand in the remaining sections is in the range of 5410 to 621 only. The planned capacity of 5730 (7298 under dense loading) is more than the PHPDT demand in nine sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Sections.

(b) 'Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/E2)

- 4 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 11460 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 14595 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 10748 is in the Section between Nagpur Railway Station to Sitaburdi and demand in the remaining sections is in the range of 10716 to 5808 only. The planned capacity of 11460 (14595 under dense loading) is more than the PHPDT demand in nine sections of 'Agrasen Chowk to Subhash Nagar' Sections.

Traffic demand and train capacity for this corridor in the year 2036 is tabulated and represented on a chart enclosed as Attachment I/E2.

**vi) Year 2041:**

Train operation in 'Parjapati Nagar to Lokmanya Nagar' Loop at 7 min headway with 3-Car train and in 'Agrasen Chowk to Subhash Nagar' Loop at 7 min headway with 3-Car train. This results in following train operation in different section:

(a) 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Refer Attachment I/F2)

- 7 min Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 6549 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 8340 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 6330 is in the Section between Chitar oli Chowk (Gandhi Putala) and demand in the remaining sections is in the range of 5871 to 659 only. The planned capacity of 6549 (8340 under dense loading) is more than the PHPDT demand in nine sections of 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' Sections.

(b) Agrasen Chowk to Subhash Nagar' Section (Refer Attachment I/F2)

- 3.5 min Effective Headway with 3-car train.
- Available Peak Hour Peak Direction Capacity of 13097 @ 6 persons per square meter of standee area
- Available Peak Hour Peak Direction Capacity of 16680 @ 8 persons per square meter of standee area under dense loading conditions.
- The maximum PHPDT demand of 11882 is in the Section between Nagpur Railway Station to Sitaburdi and demand in the remaining sections is in the range of 11528 to 6297 only. The planned capacity of 13097 (16680 under dense loading) is more than the PHPDT demand in nine sections of 'Agrasen Chowk to Subhash Nagar' Sections.

Traffic demand and train capacity for this corridor in the year 2041 is tabulated and represented on a chart enclosed as Attachment I/F2.

The above Train Operation Plan is based on calculations on the basis of available traffic data. In case of any mismatch in the capacity provided and the actual traffic, the capacity can be moderated suitably by adjusting the Headway. The PHPDT capacity provided on the two corridors in different years of operation is tabulated below:



TABLE :7.2
Capacity Provided for Line-1: North – South Corridor

Sections	Year	Headway (min)	No. of Rakes	Rake Consist	No. of Coaches	Max. PHPDT Demand	PHPDT Capacity Available
Automotive Sqre to Congress Nagar Section	2016	6	11 Rakes of 3-car	3-car	33	10089	7640 (9730*)
Congress Nagar to Khapri Station Section		12		3-car		5288	3820 (4865*)
Automotive Sqre to Congress Nagar Section	2021	5	13 Rakes of 3-car	3-car	39	10936	9168 (1676*)
Congress Nagar to Khapri Station Section		10		3-car		5728	4584 (5838*)
Automotive Sqre to Congress Nagar Section	2026	4.5	15 Rakes of 3-car	3-car	45	11915	10187 (12973*)
Congress Nagar to Khapri Station Section		9		3-car		6305	5093 (6487*)
Automotive Sqre to Congress Nagar Section	2031	4	17 Rakes of 3-car	3-car	51	12934	11460 (14595*)
Congress Nagar to Khapri Station Section		8		3-car		6918	5730 (7298*)
Automotive Sqre to Congress Nagar Section	2036	3.5	20 Rakes of 3-car	3-car	60	14286	13097 (16680*)
Congress Nagar to Khapri Station Section		7		3-car		7688	6549 (8340*)
Automotive Sqre to Congress Nagar Section	2041	3	21 Rakes of 3-car	3-car	63	15729	15280 (19460*)
Congress Nagar to Khapri Station Section		6		3-car		8477	7640 (9730*)



TABLE :7.3 Capacity Provided for Line-2: East-West Corridor

Sections	Year	Headway (min)	No. of Rakes	Rake Consist	No. of Coaches	Max. PHPDT Demand	PHPDT Capacity Available
Prajapati Nagar to Agrasen Chowk Section	2016	13	12 Rakes of 3-car	3-car	36	4090	3526 (4491*)
Agrasen Chowk to Subhash Nagar Section		6.5		3-car		7746	7052 (8982*)
Subhash Nagar to Lokmanya Nagar Section		13		3-car		3787	3526 (4491*)
Prajapati Nagar to Agrasen Chowk Section	2021	12	13 Rakes of 3-car	3-car	39	4356	3820 (4865*)
Agrasen Chowk to Subhash Nagar Section		6		3-car		8460	7640 (9730*)
Subhash Nagar to Lokmanya Nagar Section		12		3-car		4157	3820 (4865*)
Prajapati Nagar to Agrasen Chowk Section	2026	10	15 Rakes of 3-car	3-car	45	4703	4584 (5838*)
Agrasen Chowk to Subhash Nagar Section		5		3-car		9154	9168 (11676*)
Subhash Nagar to Lokmanya Nagar Section		10		3-car		4530	4584 (5838*)
Prajapati Nagar to Agrasen Chowk Section	2031	9	17 Rakes of 3-car	3-car	51	5094	5093 (6487*)
Agrasen Chowk to Subhash Nagar Section		4.5		3-car		9906	10187 (12973*)
Subhash Nagar to Lokmanya Nagar Section		9		3-car		4934	5093 (6487*)
Prajapati Nagar to Agrasen Chowk Section	2036	8	18 Rakes of 3-car	3-car	54	5542	5730 (7298*)
Agrasen Chowk to Subhash Nagar Section		4		3-car		10748	11460 (14595*)
Subhash Nagar to Lokmanya Nagar Section		8		3-car		5410	5730 (7298*)
Prajapati Nagar to Agrasen Chowk Section	2041	7	20 Rakes of 3-car	3-car	60	6330	6549 (8340*)
Agrasen Chowk to Subhash Nagar Section		3.5		3-car		11882	13097 (16680*)
Subhash Nagar to Lokmanya Nagar Section		7		3-car		5871	6549 (8340*)

* @ 8 persons per square meter of standee area



7.3.5 Train frequency

TABLE :7.4

Train Frequency Line-1: North – South Corridor

Sections	2016		2021		2026		2031		2036		2041	
	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w
Automotive Sqre to Congress Nagar Section	6 min	10 to 30 min	5 min	8 to 20 min	4.5m in	6 to 20 min	4 min	6 to 20 min	3.5 min	5 to 15 min	3 min	5 to 15 min
Congress Nagar to Khapri Station Section	12 min	20 to 60 min	10 min	16 to 40 min	9 min	12 to 40 min	8 min	12 to 40 min	7 min	10 to 30 min	6 min	10 to 30 min

TABLE :7.5

Train Frequency Line-2: East-West Corridor

Sections	2016		2021		2026		2031		2036		2041	
	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w	Peak Hour h/w	Lean Hour h/w
Prajapati Nagar to Agrasen Chowk Section	13 min	20 to 60 min	12 min	20 to 60 min	10 min	16 to 40 min	9 min	12 to 40 min	8 min	12 to 40 min	7 min	10 to 30 min
Agrasen Chowk to Subhash Nagar Section	6.5 min	10 to 30 min	6 min	10 to 30 min	5 min	8 to 20 min	4.5 min	6 to 20 min	4 min	6 to 20 min	3.5 min	5 to 15 min
Subhash Nagar to Lokmanya Nagar Section	13 min	20 to 60 min	12 min	20 to 60 min	10 min	16 to 40 min	9 min	12 to 40 min	8 min	12 to 40 min	7 min	10 to 30 min

No services are proposed between 00.00 hrs to 5.00 hrs, which are reserved for maintenance of infrastructure and rolling stock.



7.3.6 Hourly Train Operation plan

The hourly distribution of daily transport capacity is presented in **Table 1.1A, 1.1B, 1.2A, 1.2B, 1.3A, 1.3B, 1.4A, 1.4B, 1.5A, 1.5B, 1.6A, & 1.6B** for 'Automotive Sqre to Congress Nagar' Section and 'Congress Nagar to Khapari' Section (Line-1: North – South Corridor) and **Table 1.7A, 1.7B, 1.7C, 1.8A, 1.8B, 1.8C, 1.9A, 1.9B, 1.9C, 1.10A, 1.10B, 1.10C, 1.11A, 1.11B, 1.11C, 1.12A, 1.12B, & 1.12C** for 'Prajapati Nagar to Agrasen Chowk' Section, 'Agrasen Chowk to Subhash Nagar' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Line-2: East- West Corridor) respectively for years 2016, 2021, 2026, 2031, 2036, 2041 and enclosed as **Attachment II**.

Number of train trips per direction per day for 'Automotive Sqre to Congress Nagar' Section and 'Congress Nagar to Khapari' Section (Line-1: North – South Corridor) is worked out as 108 & 54 in the year 2016, 138 & 69 in the year 2021 and 158 & 79 in the year 2026, 168 & 84 in the year 2031, 200 & 100 in the year 2036 and 216 & 108 in the year 2041 respectively. Number of train trips per directions per day for 'Prajapati Nagar to Agrasen Chowk' Section, 'Agrasen Chowk to Subhash Nagar' Section and 'Subhash Nagar to Lokmanya Nagar' Section (Line-2: East- West Corridor) is worked out as 51,102 & 51 in the year 2016, 54, 108 & 54 in the year 2021 and 70,140 & 70 in the year 2026, 74, 158 & 74 in the year 2031, 83, 166 & 83 in the year 2036 and 99, 198 & 99 in the year 2041 respectively. The directional splits for Line-1: North – South Corridor and Line-2: East- West Corridor is presented in **Table 2.1 and 2.2** enclosed as **Attachment III**.

7.3.7 Vehicle Kilometer

Based on above planning, after considering maintenance period and assuming 340 days in service in a year, Vehicle Kilometers for Nagpur Metro Rail Network is given in **Table 3.1** for Line 1: North-South corridor and **Table 3.2** for Line 2: East-West Corridor enclosed as **Attachment IV**.

7.4 YEAR WISE RAKE REQUIREMENT

Based on Train formation and headway as decided above to meet Peak Hour Peak Direction Traffic Demand, Rake requirement has been calculated and enclosed as **Attachment V**.

Requirements of coaches is calculated based on following assumptions-
Assumptions –

(i) Train Composition planned as under

3 car Train Composition : DMC +TC +DMC

Train Carrying Capacity of 3 : 764 passengers @6 standee/sqm
Car Train (@6 passengers per
square meter of standee area)



- (ii) Coach requirement has been calculated based on headway during peak hours.
- (iii) Traffic reserve is taken as one train to cater to failure of train on line and to make up for operational time list.
- (iv) Repair and maintenance reserve has been estimated as 8 % of total requirement (Bare).
- (v) The calculated number of rakes in fraction is rounded off to next higher number.
- (vi) Schedule speed is taken as:

Line-1: North-South Corridor

- 'Automotive Sqre to Congress Nagar' Section: 32 kmph
- 'Congress Nagar to Khapri Station' Section: 36 kmph

Line-2: East-West Corridor

- 'Prajapati Nagar to Lokmanya Nagar' Section: 30 kmph
- 'Agrasen Chowk to Subhash Nagar' Section: 29 kmph

- (vii) Total Turn round time is taken as 6 min at terminal stations.

7.5 Cost Estimate

The estimated cost per coach at June 2012 Price level exclusive of taxes and duties may be assumed as INR 8.5 Crores per Coach. Total 33+36 = 69 coaches are required in year 2016 for the two lines in Nagpur Metro Rail Network.

PHPDT Demand and Capacity Chart
Nagpur Metro Rail Network
Line 1 : North - South Corridor

	Year:	2016
	No. of Cars per Train:	3
	Passenger Capacity @ 6 persons/sqm of a 3-Car Train:	764
	Passenger Capacity @ 8 persons/sqm of a 3-Car Train:	973
	Headway (min)	6
	Headway (min)	12

(In 'Automotive Sqre to Congress Nagar' Section)
(In 'Congress Nagar to Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	2561	7640	9730
2	NARI ROAD	INDORA CHOWK	3754	7640	9730
3	INDORA CHOWK	KADVI CHOWK	4885	7640	9730
4	KADVI CHOWK	GADDI GODAM SQRE	6039	7640	9730
5	GADDI GODAM SQRE	KASTURCHAND PARK	6059	7640	9730
6	KASTURCHAND PARK	ZERO MILE	7326	7640	9730
7	ZERO MILE	SITABURDI	8272	7640	9730
8	SITABURDI	CONGRESS NAGAR	10089	7640	9730
9	CONGRESS NAGAR	RAHATE COLONY	5288	3820	4865
10	RAHATE COLONY	AJNI SQUARE	4513	3820	4865
11	AJNI SQUARE	CHHATRAPATI SQUARE	3935	3820	4865
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	3561	3820	4865
13	JAIPRAKASH NAGAR	UJWAL NAGAR	3289	3820	4865
14	UJWAL NAGAR	AIRPORT	2939	3820	4865
15	AIRPORT	NEW AIRPORT	2735	3820	4865
16	NEW AIRPORT	KHAPARI	2140	3820	4865

Note: Reversal facility required at Congress Nagar.

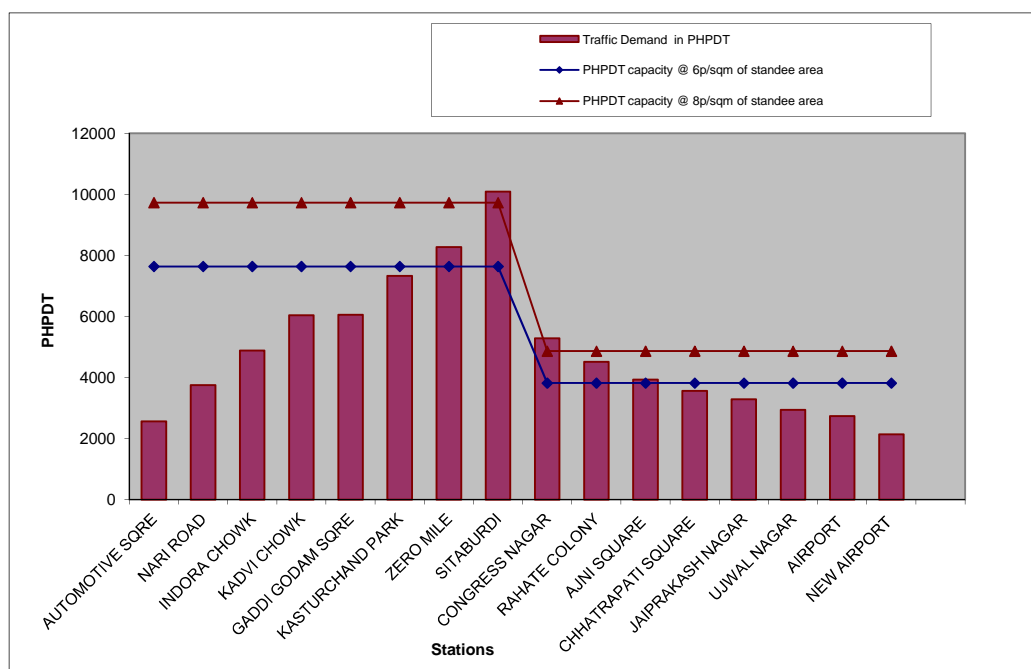


Fig 1.1

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network Line 2 : East - West Corridor

	Year:	2016
	No. of Cars per Train:	3
	Passenger Capacity @ 6 persons/sqm of a 3-Car Train:	764
	Passenger Capacity @ 8 persons/sqm of a 3-Car Train:	973
	Headway (min)	6.5
	Headway (min)	13

(In 'Agrasen Chowk to Subhash Nagar' Section)
(In 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	481	3526	4491
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	903	3526	4491
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1378	3526	4491
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	2919	3526	4491
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	4090	3526	4491
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	4843	7052	8982
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	5288	7052	8982
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	7341	7052	8982
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	6141	7052	8982
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	4038	7052	8982
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	7746	7052	8982
12	SHANKAR NAGAR SQUARE	LAD CHOWK	6114	7052	8982
13	LAD CHOWK	DHARMPETH COLLEGE	5601	7052	8982
14	DHARMPETH COLLEGE	SUBHASH NAGAR	4072	7052	8982
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	3787	3526	4491
16	RACHNA RING ROAD JN.	VASDEV NAGAR	3494	3526	4491
17	VASDEV NAGAR	BANSI NAGAR	2714	3526	4491
18	BANSI NAGAR	LOKMANYA NAGAR	2212	3526	4491

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

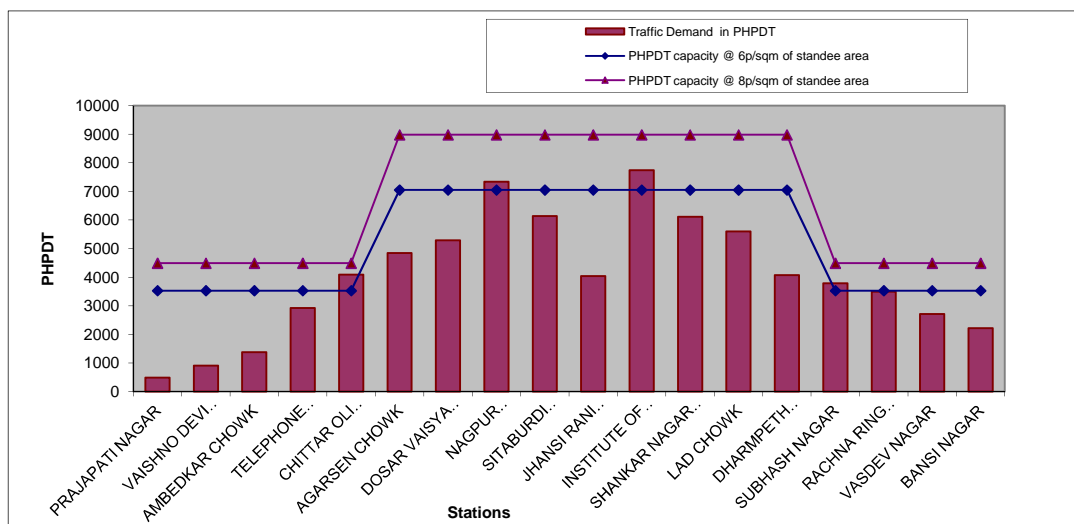


Fig 1.2

PHPDT Demand and Capacity Chart
Nagpur Metro Rail Network
 Line 1 : North - South Corridor

Year: **2021**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min) **5**
 Headway (min) **10**

(In 'Automotive Sqre to Congress Nagar' Section)
 (In 'Congress Nagar to Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	3010	9168	11676
2	NARI ROAD	INDORA CHOWK	4476	9168	11676
3	INDORA CHOWK	KADVI CHOWK	5767	9168	11676
4	KADVI CHOWK	GADDI GODAM SQRE	7042	9168	11676
5	GADDI GODAM SQRE	KASTURCHAND PARK	7021	9168	11676
6	KASTURCHAND PARK	ZERO MILE	8313	9168	11676
7	ZERO MILE	SITABURDI	9225	9168	11676
8	SITABURDI	CONGRESS NAGAR	10936	9168	11676
9	CONGRESS NAGAR	RAHATE COLONY	5728	4584	5838
10	RAHATE COLONY	AJNI SQUARE	4876	4584	5838
11	AJNI SQUARE	CHHATRAPATI SQUARE	4241	4584	5838
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	3822	4584	5838
13	JAIPRAKASH NAGAR	UJWAL NAGAR	3520	4584	5838
14	UJWAL NAGAR	AIRPORT	3136	4584	5838
15	AIRPORT	NEW AIRPORT	2911	4584	5838
16	NEW AIRPORT	KHAPARI	2267	4584	5838

Note: Reversal facility required at Congress Nagar.

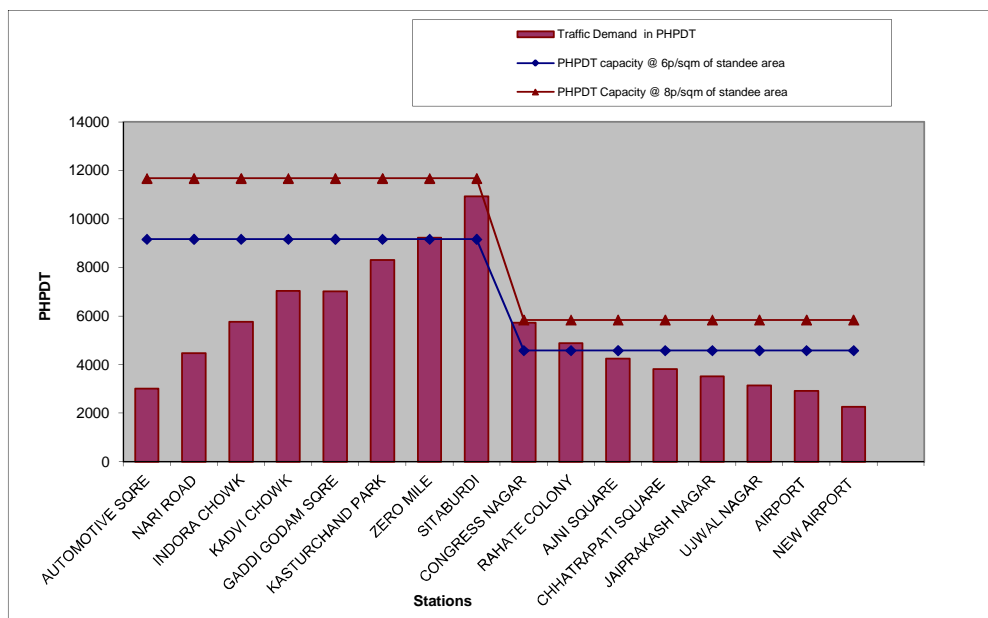


Fig 2.1

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network

Line 2 : East - West Corridor

	Year:	2021
	No. of Cars per Train:	3
	Passenger Capacity @ 6 persons/sqm of a 3-Car Train:	764
	Passenger Capacity @ 8 persons/sqm of a 3-Car Train:	973
	Headway (min)	6
	Headway (min)	12

(In 'Agrasen Chowk to Subhash Nagar' Section)
(In 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	517	3820	4865
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	971	3820	4865
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1479	3820	4865
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	3084	3820	4865
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	4356	3820	4865
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	5167	7640	9730
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	5649	7640	9730
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	7970	7640	9730
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	6691	7640	9730
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	4486	7640	9730
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	8460	7640	9730
12	SHANKAR NAGAR SQUARE	LAD CHOWK	6693	7640	9730
13	LAD CHOWK	DHARMPETH COLLEGE	6147	7640	9730
14	DHARMPETH COLLEGE	SUBHASH NAGAR	4472	7640	9730
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	4157	3820	4865
16	RACHNA RING ROAD JN.	VASDEV NAGAR	3828	3820	4865
17	VASDEV NAGAR	BANSI NAGAR	2960	3820	4865
18	BANSI NAGAR	LOKMANYA NAGAR	2400	3820	4865

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

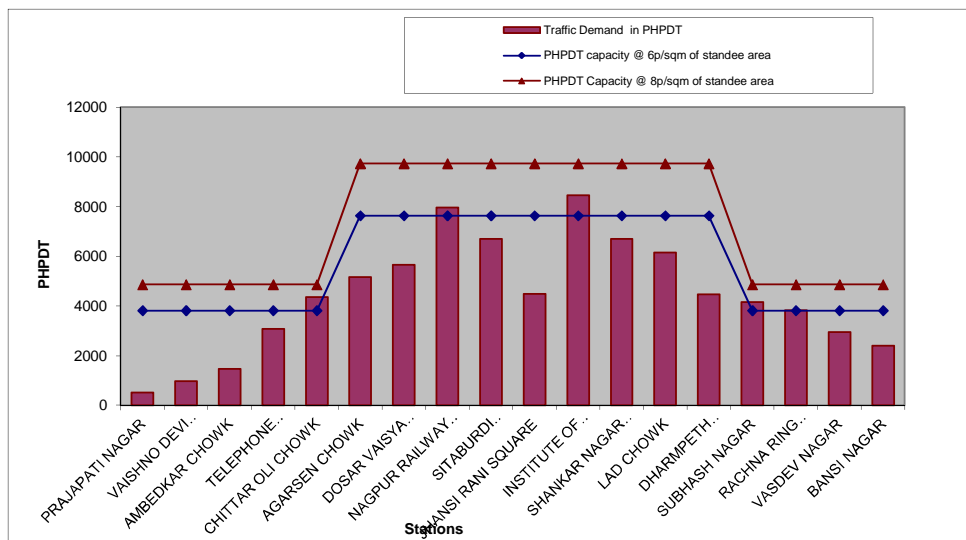


Fig 2.2

PHPDT Demand and Capacity Chart
Nagpur Metro Rail Network
Line 1 : North - South Corridor

Year: **2026**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min): **4.5**

(In 'Automotive Sqre to
Congress Nagar' Section)

Headway (min) **9**

(In 'Congress Nagar to
Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	3453	10187	12973
2	NARI ROAD	INDORA CHOWK	5115	10187	12973
3	INDORA CHOWK	KADVI CHOWK	6547	10187	12973
4	KADVI CHOWK	GADDI GODAM SQRE	7945	10187	12973
5	GADDI GODAM SQRE	KASTURCHAND PARK	7914	10187	12973
6	KASTURCHAND PARK	ZERO MILE	9379	10187	12973
7	ZERO MILE	SITABURDI	10297	10187	12973
8	SITABURDI	CONGRESS NAGAR	11915	10187	12973
9	CONGRESS NAGAR	RAHATE COLONY	6305	5093	6487
10	RAHATE COLONY	AJNI SQUARE	5338	5093	6487
11	AJNI SQUARE	CHHATRAPATI SQUARE	4641	5093	6487
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	4185	5093	6487
13	JAIPRAKASH NAGAR	UJWAL NAGAR	3861	5093	6487
14	UJWAL NAGAR	AIRPORT	3441	5093	6487
15	AIRPORT	NEW AIRPORT	3193	5093	6487
16	NEW AIRPORT	KHAPARI	2489	5093	6487

Note: Reversal facility required at Congress Nagar.

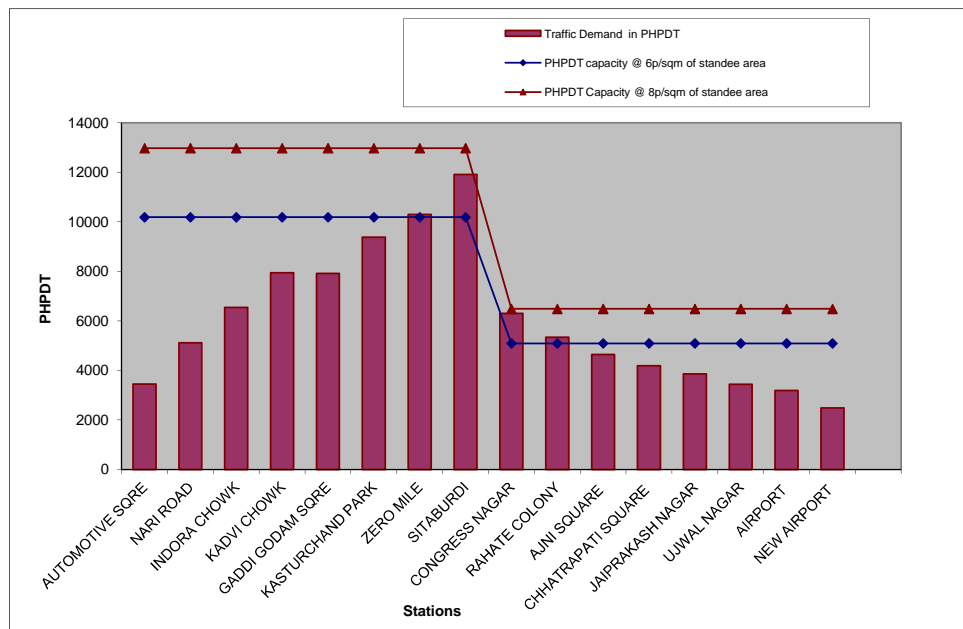


Fig 3.1

PHPDT Demand and Capacity Chart
Nagpur Metro Rail Network
Line 2 : East - West Corridor

Year: **2026**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min) **5**

(In 'Agrasen Chowk to Subhash Nagar' Section)

Headway (min) **10**

(In 'Prajaapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	549	4584	5838
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	1033	4584	5838
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1578	4584	5838
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	3333	4584	5838
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	4703	4584	5838
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	5572	9168	11676
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	6097	9168	11676
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	8754	9168	11676
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	7346	9168	11676
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	4912	9168	11676
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	9154	9168	11676
12	SHANKAR NAGAR SQUARE	LAD CHOWK	7275	9168	11676
13	LAD CHOWK	DHARMPETH COLLEGE	6684	9168	11676
14	DHARMPETH COLLEGE	SUBHASH NAGAR	4870	9168	11676
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	4530	4584	5838
16	RACHNA RING ROAD JN.	VASDEV NAGAR	4159	4584	5838
17	VASDEV NAGAR	BANSI NAGAR	3217	4584	5838
18	BANSI NAGAR	LOKMANYA NAGAR	2603	4584	5838

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

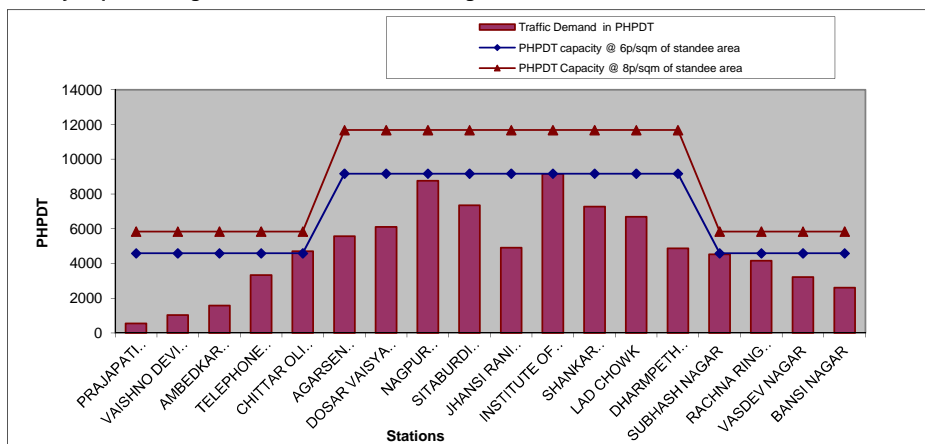


Fig 3.2

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network Line 1 : North - South Corridor

Year: **2031**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min) **4**
 Headway (min) **8**

(In 'Automotive Sqre to Congress Nagar' Section)
 (In 'Congress Nagar to Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	4045	11460	14595
2	NARI ROAD	INDORA CHOWK	5960	11460	14595
3	INDORA CHOWK	KADVI CHOWK	7562	11460	14595
4	KADVI CHOWK	GADDI GODAM SQRE	9098	11460	14595
5	GADDI GODAM SQRE	KASTURCHAND PARK	9092	11460	14595
6	KASTURCHAND PARK	ZERO MILE	10804	11460	14595
7	ZERO MILE	SITABURDI	11631	11460	14595
8	SITABURDI	CONGRESS NAGAR	12934	11460	14595
9	CONGRESS NAGAR	RAHATE COLONY	6918	5730	7298
10	RAHATE COLONY	AJNI SQUARE	5854	5730	7298
11	AJNI SQUARE	CHHATRAPATI SQUARE	5084	5730	7298
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	4590	5730	7298
13	JAIPRAKASH NAGAR	UJWAL NAGAR	4241	5730	7298
14	UJWAL NAGAR	AIRPORT	3787	5730	7298
15	AIRPORT	NEW AIRPORT	3513	5730	7298
16	NEW AIRPORT	KHAPARI	2748	5730	7298

Note: Reversal facility required at Congress Nagar.

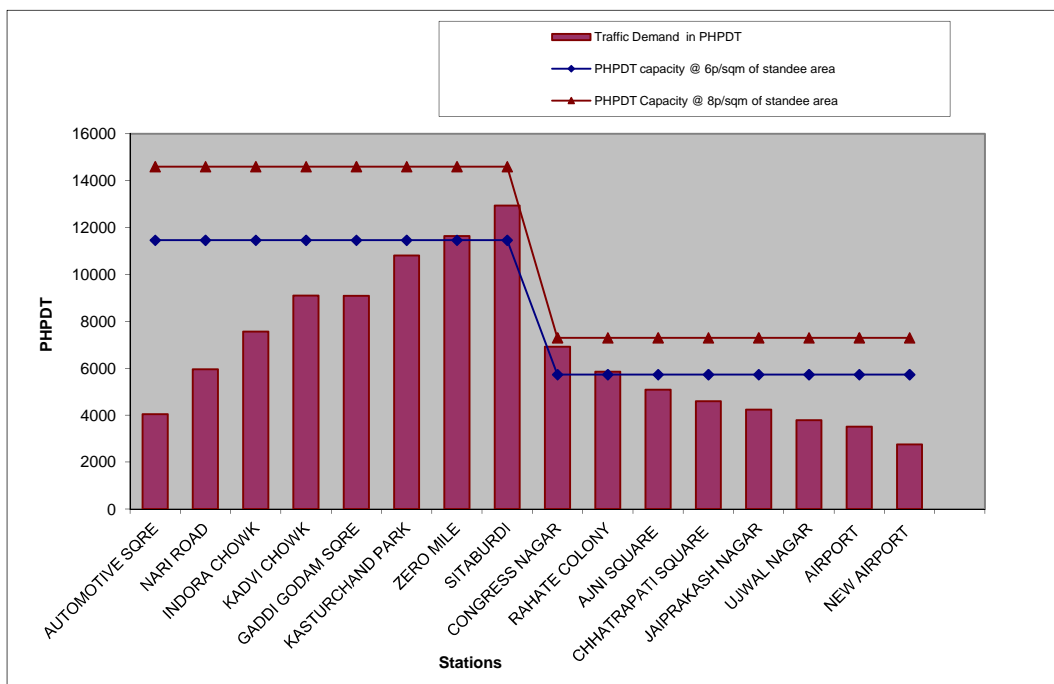


Fig 4.1

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network

Line 2 : East - West Corridor

	Year:	2031
	No. of Cars per Train:	3
Passenger Capacity @ 6 persons/sqm of a 3-Car Train:		764
Passenger Capacity @ 8 persons/sqm of a 3-Car Train:		973
	Headway (min)	4.5
	Headway (min)	9

(In 'Agrasen Chowk to Subhash Nagar' Section)
(In 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	585	5093	6487
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	1102	5093	6487
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1685	5093	6487
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	3607	5093	6487
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	5094	5093	6487
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	6037	10187	12973
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	6610	10187	12973
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	9675	10187	12973
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	8188	10187	12973
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	5458	10187	12973
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	9906	10187	12973
12	SHANKAR NAGAR SQUARE	LAD CHOWK	7898	10187	12973
13	LAD CHOWK	DHARMPETH COLLEGE	7269	10187	12973
14	DHARMPETH COLLEGE	SUBHASH NAGAR	5301	10187	12973
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	4934	5093	6487
16	RACHNA RING ROAD JN.	VASDEV NAGAR	4527	5093	6487
17	VASDEV NAGAR	BANSI NAGAR	3504	5093	6487
18	BANSI NAGAR	LOKMANYA NAGAR	2833	5093	6487

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

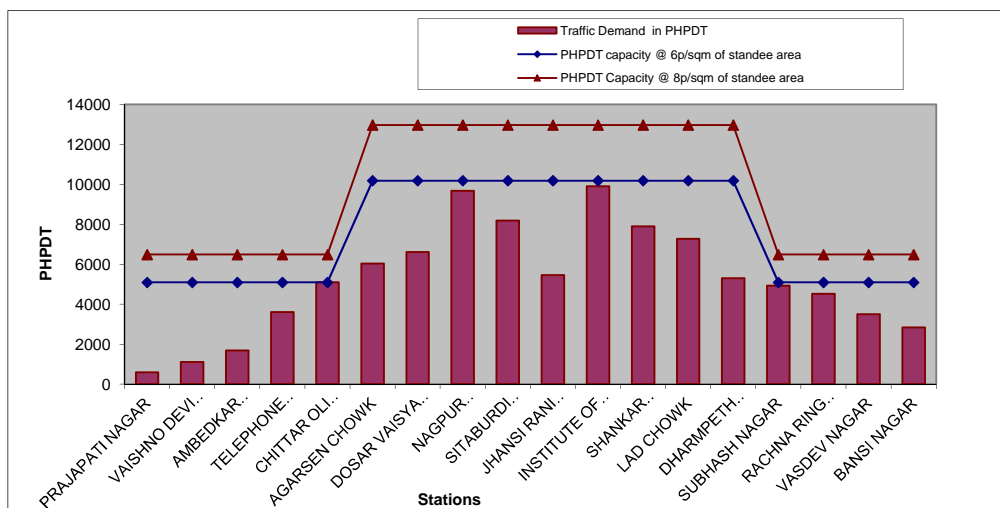


Fig 4.2

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network

Line 1 : North - South Corridor

Year: **2036**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min) **3.5** (In 'Automotive Sqre to Congress Nagar' Section)
 Headway (min) **7** (In 'Congress Nagar to Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	4611	13097	16680
2	NARI ROAD	INDORA CHOWK	6792	13097	16680
3	INDORA CHOWK	KADVI CHOWK	8609	13097	16680
4	KADVI CHOWK	GADDI GODAM SQRE	10325	13097	16680
5	GADDI GODAM SQRE	KASTURCHAND PARK	10333	13097	16680
6	KASTURCHAND PARK	ZERO MILE	12132	13097	16680
7	ZERO MILE	SITABURDI	13002	13097	16680
8	SITABURDI	CONGRESS NAGAR	14286	13097	16680
9	CONGRESS NAGAR	RAHATE COLONY	7688	6549	8340
10	RAHATE COLONY	AJNI SQUARE	6476	6549	8340
11	AJNI SQUARE	CHHATRAPATI SQUARE	5607	6549	8340
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	5070	6549	8340
13	JAIPRAKASH NAGAR	UJWAL NAGAR	4680	6549	8340
14	UJWAL NAGAR	AIRPORT	4177	6549	8340
15	AIRPORT	NEW AIRPORT	3878	6549	8340
16	NEW AIRPORT	KHAPARI	3049	6549	8340

Note: Reversal facility required at Congress Nagar.

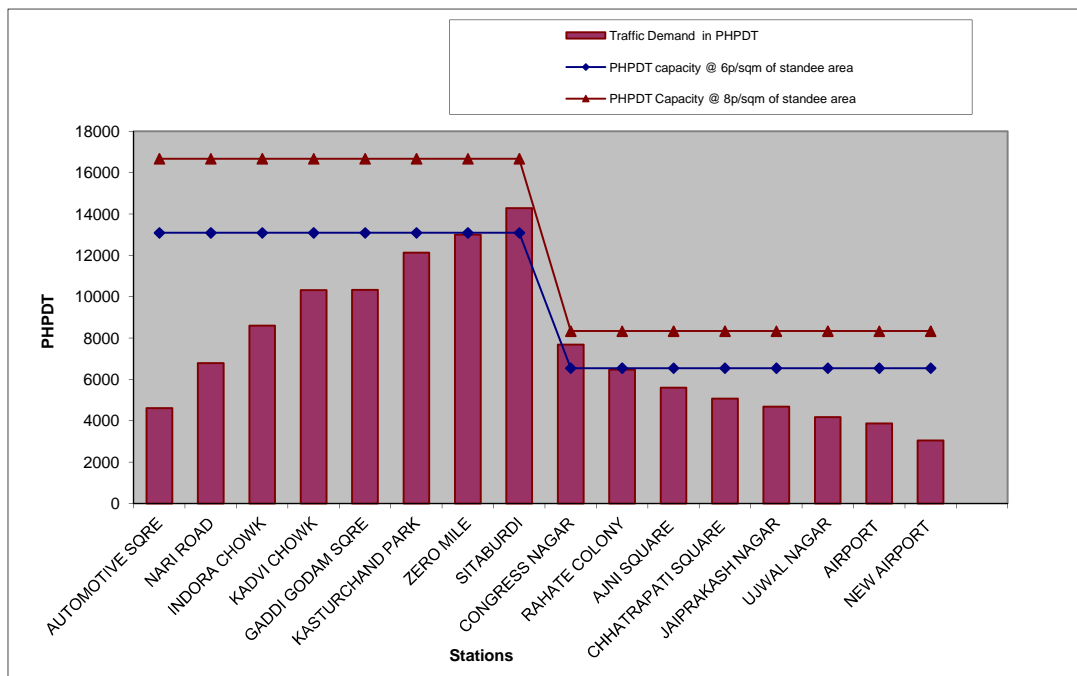


Fig 5.1

PHPDT Demand and Capacity Chart
Nagpur Metro Rail Network
Line 2 : East - West Corridor

	Year:	2036	
	No. of Cars per Train:	3	
	Passenger Capacity @ 6 persons/sqm of a 3-Car Train:	764	
	Passenger Capacity @ 8 persons/sqm of a 3-Car Train:	973	
	Headway (min)	4	(In 'Agrasen Chowk to Subhash Nagar' Section)
	Headway (min)	8	(In 'Prajapati Nagar to Agrasen Chowk' Section and 'Subhash Nagar to Lokmanya Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	621	5730	7298
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	1174	5730	7298
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1803	5730	7298
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	4003	5730	7298
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	5542	5730	7298
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	6544	11460	14595
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	7540	11460	14595
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	10748	11460	14595
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	9050	11460	14595
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	6001	11460	14595
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	10716	11460	14595
12	SHANKAR NAGAR SQUARE	LAD CHOWK	8610	11460	14595
13	LAD CHOWK	DHARMPETH COLLEGE	7936	11460	14595
14	DHARMPETH COLLEGE	SUBHASH NAGAR	5808	11460	14595
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	5410	5730	7298
16	RACHNA RING ROAD JN.	VASDEV NAGAR	4932	5730	7298
17	VASDEV NAGAR	BANSI NAGAR	3813	5730	7298
18	BANSI NAGAR	LOKMANYA NAGAR	3082	5730	7298

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

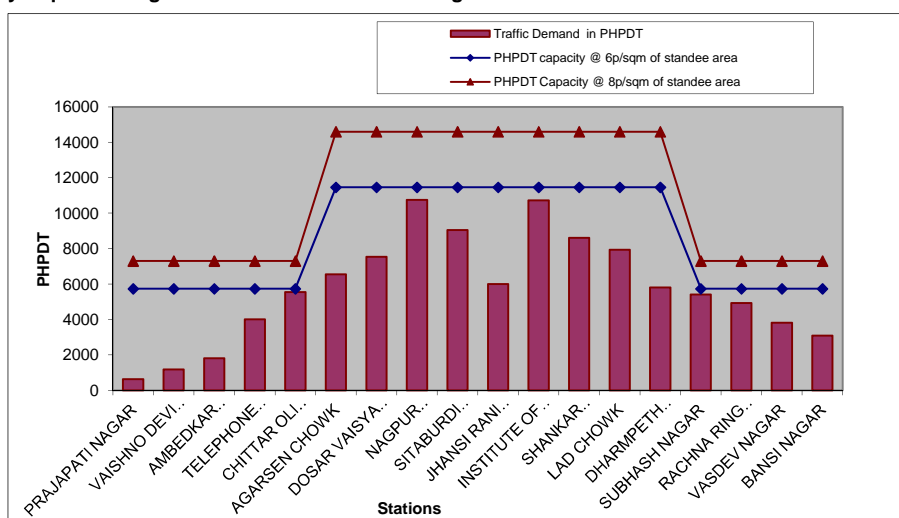


Fig 5.2

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network

Line 1 : North - South Corridor

	Year:	2041
	No. of Cars per Train:	3
	Passenger Capacity @ 6 persons/sqm of a 3-Car Train:	764
	Passenger Capacity @ 8 persons/sqm of a 3-Car Train:	973
	Headway (min)	3
	Headway (min)	6

(In 'Automotive Sqre to Congress Nagar' Section)
(In 'Congress Nagar to Khapari' Section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	AUTOMOTIVE SQRE	NARI ROAD	5274	15280	19460
2	NARI ROAD	INDORA CHOWK	7815	15280	19460
3	INDORA CHOWK	KADVI CHOWK	9833	15280	19460
4	KADVI CHOWK	GADDI GODAM SQRE	11719	15280	19460
5	GADDI GODAM SQRE	KASTURCHAND PARK	11743	15280	19460
6	KASTURCHAND PARK	ZERO MILE	13724	15280	19460
7	ZERO MILE	SITABURDI	14572	15280	19460
8	SITABURDI	CONGRESS NAGAR	15729	15280	19460
9	CONGRESS NAGAR	RAHATE COLONY	8477	7640	9730
10	RAHATE COLONY	AJNI SQUARE	7149	7640	9730
11	AJNI SQUARE	CHHATRAPATI SQUARE	6185	7640	9730
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	5608	7640	9730
13	JAIPRAKASH NAGAR	UJWAL NAGAR	5179	7640	9730
14	UJWAL NAGAR	AIRPORT	4624	7640	9730
15	AIRPORT	NEW AIRPORT	4302	7640	9730
16	NEW AIRPORT	KHAPARI	3660	7640	9730

Note: Reversal facility required at Congress Nagar.

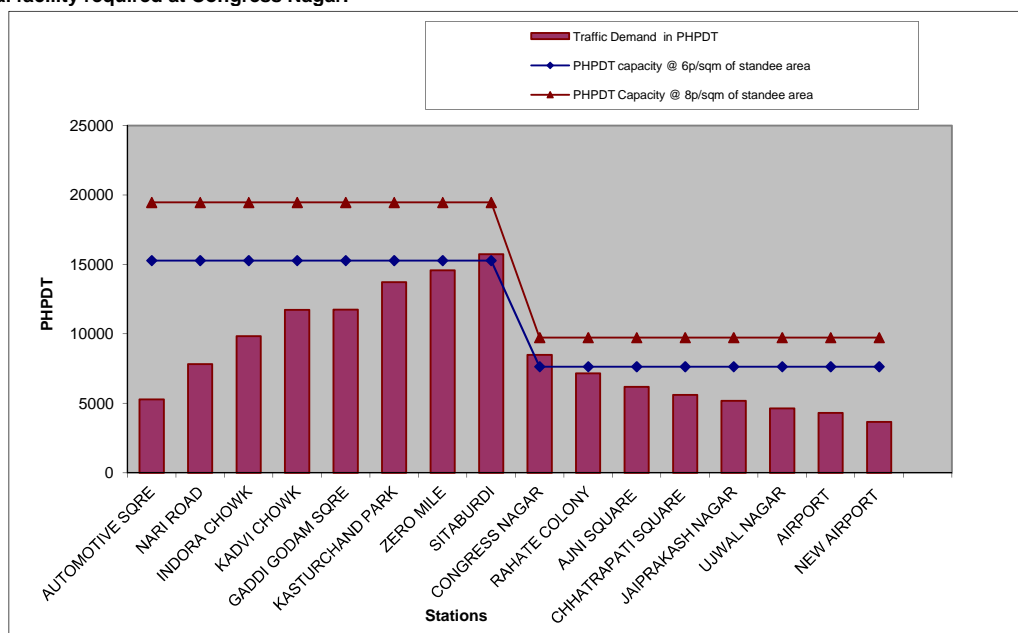


Fig 6.1

PHPDT Demand and Capacity Chart Nagpur Metro Rail Network

Line 2 : East - West Corridor

Year: **2041**
 No. of Cars per Train: **3**
 Passenger Capacity @ 6 persons/sqm of a 3-Car Train: **764**
 Passenger Capacity @ 8 persons/sqm of a 3-Car Train: **973**
 Headway (min) **3.5**
 Headway (min) **7**

(In 'Agrasen Chowk to
Subhash Nagar' Section)
 (In 'Prajapati Nagar to
Agrasen Chowk' Section and
'Subhash Nagar to Lokmanya
Nagar' section)

S.N	FROM	TO	Traffic Demand in PHPDT	PHPDT capacity @ 6p/sqm of standee area	PHPDT capacity @ 8p/sqm of standee area
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	659	6549	8340
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	1250	6549	8340
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1925	6549	8340
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	4601	6549	8340
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	6330	6549	8340
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	7386	13097	16680
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	8297	13097	16680
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	11882	13097	16680
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	10064	13097	16680
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	6640	13097	16680
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	11528	13097	16680
12	SHANKAR NAGAR SQUARE	LAD CHOWK	9314	13097	16680
13	LAD CHOWK	DHARMPETH COLLEGE	8588	13097	16680
14	DHARMPETH COLLEGE	SUBHASH NAGAR	6297	13097	16680
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	5871	6549	8340
16	RACHNA RING ROAD JN.	VASDEV NAGAR	5341	6549	8340
17	VASDEV NAGAR	BANSI NAGAR	4136	6549	8340
18	BANSI NAGAR	LOKMANYA NAGAR	3346	6549	8340

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

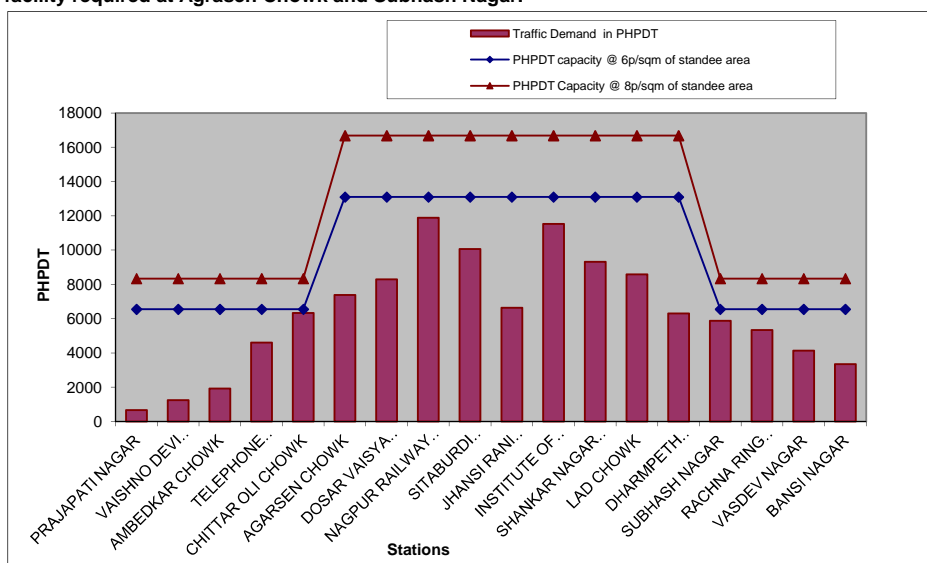


Fig 6.2

Nagpur Metro Rail Network
Line 1 : North - South Corridor

TABLE 1.1 A
Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR
Year: 2016
Configuration: 3 Car
Headway(min): 6

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	3	2
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	6	10	10
9 to 10	6	10	10
10 to 11	6	10	10
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	6	10	10
18 to 19	6	10	10
19 to 20	6	10	10
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	2	3
23 to 24	30	2	2
Total No. of train trips per direction per day		108	108

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.2 A

Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR

Year: 2021

Configuration: 3 Car

Headway(min): 5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	4	3
6 to 7	12	5	5
7 to 8	8	8	7
8 to 9	5	12	12
9 to 10	5	12	12
10 to 11	5	12	12
11 to 12	8	7	7
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	8	7	8
17 to 18	5	12	12
18 to 19	5	12	12
19 to 20	5	12	12
20 to 21	8	7	7
21 to 22	12	5	5
22 to 23	16	3	4
23 to 24	20	3	3
Total No. of train trips per direction per day		138	138

Nagpur Metro Rail Network
Line 1 : North - South Corridor

TABLE 1.3 A
Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR
Year: 2026
Configuration: 3 Car
Headway(min): 4.5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	3	4
6 to 7	12	5	5
7 to 8	6	10	10
8 to 9	4.5	13	14
9 to 10	4.5	14	13
10 to 11	4.5	13	14
11 to 12	6	10	10
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	6	10	10
17 to 18	4.5	14	13
18 to 19	4.5	13	14
19 to 20	4.5	14	13
20 to 21	6	10	10
21 to 22	12	5	5
22 to 23	16	4	3
23 to 24	20	3	3
Total No. of train trips per direction per day		158	158

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.4 A

Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR

Year: 2031

Configuration: 3 Car

Headway(min): 4

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	4	4
6 to 7	12	5	5
7 to 8	6	10	10
8 to 9	4	15	15
9 to 10	4	15	15
10 to 11	4	15	15
11 to 12	6	10	10
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	6	10	10
17 to 18	4	15	15
18 to 19	4	15	15
19 to 20	4	15	15
20 to 21	6	10	10
21 to 22	12	5	5
22 to 23	16	4	4
23 to 24	20	3	3
Total No. of train trips per direction per day		168	168

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.5 A

Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR

Year: 2036

Configuration: 3 Car

Headway(min): 3.5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	12	5	5
6 to 7	10	6	6
7 to 8	5	12	12
8 to 9	3.5	17	18
9 to 10	3.5	17	17
10 to 11	3.5	17	18
11 to 12	5	12	12
12 to 13	10	6	6
13 to 14	12	5	5
14 to 15	12	5	5
15 to 16	10	6	6
16 to 17	5	12	12
17 to 18	3.5	18	17
18 to 19	3.5	17	17
19 to 20	3.5	18	17
20 to 21	5	12	12
21 to 22	10	6	6
22 to 23	12	5	5
23 to 24	15	4	4
Total No. of train trips per direction per day		200	200

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.6 A

Hourly Train Operation Plan for AUTOMOTIVE SQRE to CONGRESS NAGAR

Year: 2041

Configuration: 3 Car

Headway(min): 3

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	12	5	5
6 to 7	10	6	6
7 to 8	5	12	12
8 to 9	3	20	20
9 to 10	3	20	20
10 to 11	3	20	20
11 to 12	5	12	12
12 to 13	10	6	6
13 to 14	12	5	5
14 to 15	12	5	5
15 to 16	10	6	6
16 to 17	5	12	12
17 to 18	3	20	20
18 to 19	3	20	20
19 to 20	3	20	20
20 to 21	5	12	12
21 to 22	10	6	6
22 to 23	12	5	5
23 to 24	15	4	4
Total No. of train trips per direction per day		216	216

Nagpur Metro Rail Network
Line 1 : North - South Corridor

TABLE 1.1 B
Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI
Year: 2016
Configuration: 3 Car
Headway(min): 12

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	48	1	1
6 to 7	40	2	1
7 to 8	20	3	3
8 to 9	12	5	5
9 to 10	12	5	5
10 to 11	12	5	5
11 to 12	20	3	3
12 to 13	40	1	2
13 to 14	48	1	2
14 to 15	48	2	1
15 to 16	40	2	1
16 to 17	20	3	3
17 to 18	12	5	5
18 to 19	12	5	5
19 to 20	12	5	5
20 to 21	20	3	3
21 to 22	40	1	2
22 to 23	48	1	1
23 to 24	60	1	1
Total No. of train trips per direction per day		54	54

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.2 B

Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI

Year: 2021

Configuration: 3 Car

Headway(min): 10

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	2
6 to 7	24	3	2
7 to 8	16	4	3
8 to 9	10	6	6
9 to 10	10	6	6
10 to 11	10	6	6
11 to 12	16	4	3
12 to 13	24	2	3
13 to 14	32	2	1
14 to 15	32	1	2
15 to 16	24	3	2
16 to 17	16	3	4
17 to 18	10	6	6
18 to 19	10	6	6
19 to 20	10	6	6
20 to 21	16	3	4
21 to 22	24	2	3
22 to 23	32	2	2
23 to 24	40	2	2
Total No. of train trips per direction per day		69	69

Nagpur Metro Rail Network
Line 1 : North - South Corridor

TABLE 1.3 B
Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI
Year: 2026
Configuration: 3 Car
Headway(min): 9

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	2
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	9	6	7
9 to 10	9	7	6
10 to 11	9	6	7
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	2	2
14 to 15	32	2	2
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	9	7	6
18 to 19	9	6	7
19 to 20	9	7	6
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	2	2
23 to 24	40	2	2
Total No. of train trips per direction per day		79	79

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.4 B

Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI

Year: 2031

Configuration: 3 Car

Headway(min): 8

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	2
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	8	7	8
9 to 10	8	8	7
10 to 11	8	7	8
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	2	1
14 to 15	32	1	2
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	8	8	7
18 to 19	8	7	8
19 to 20	8	8	7
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	2	2
23 to 24	40	2	2
Total No. of train trips per direction per day		84	84

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.5 B

Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI

Year: 2036

Configuration: 3 Car

Headway(min): 7

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	3	2
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	7	8	9
9 to 10	7	9	9
10 to 11	7	8	9
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	2	3
14 to 15	24	3	2
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	7	9	8
18 to 19	7	9	9
19 to 20	7	9	8
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	2	3
23 to 24	30	2	2
Total No. of train trips per direction per day		100	100

Nagpur Metro Rail Network

Line 1 : North - South Corridor

TABLE 1.6 B

Hourly Train Operation Plan for CONGRESS NAGAR to KHAPARI

Year: 2041

Configuration: 3 Car

Headway(min): 6

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	2	3
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	6	10	10
9 to 10	6	10	10
10 to 11	6	10	10
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	6	10	10
18 to 19	6	10	10
19 to 20	6	10	10
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	3	2
23 to 24	30	2	2
Total No. of train trips per direction per day		108	108

Nagpur Metro Rail Network
Line 2 : East - West Corridor

TABLE 1.7 A
Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK
Year: 2016
Configuration: 3 Car
Headway(min): 13

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	48	1	1
6 to 7	40	2	1
7 to 8	20	3	3
8 to 9	13	4	5
9 to 10	13	5	4
10 to 11	13	4	5
11 to 12	20	3	3
12 to 13	40	1	2
13 to 14	48	1	2
14 to 15	48	2	1
15 to 16	40	2	1
16 to 17	20	3	3
17 to 18	13	5	4
18 to 19	13	4	5
19 to 20	13	5	4
20 to 21	20	3	3
21 to 22	40	1	2
22 to 23	48	1	1
23 to 24	60	1	1
Total No. of train trips per direction per day		51	51

TABLE 1.8 A

Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK

Year: 2021

Configuration: 3 Car

Headway(min): 12

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	48	1	1
6 to 7	40	2	1
7 to 8	20	3	3
8 to 9	12	5	5
9 to 10	12	5	5
10 to 11	12	5	5
11 to 12	20	3	3
12 to 13	40	1	2
13 to 14	48	2	1
14 to 15	48	1	2
15 to 16	40	2	1
16 to 17	20	3	3
17 to 18	12	5	5
18 to 19	12	5	5
19 to 20	12	5	5
20 to 21	20	3	3
21 to 22	40	1	2
22 to 23	48	1	1
23 to 24	60	1	1
Total No. of train trips per direction per day		54	54

TABLE 1.9 A
Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK
Year: 2026
Configuration: 3 Car
Headway(min): 10

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	2
6 to 7	24	3	2
7 to 8	16	4	3
8 to 9	10	6	6
9 to 10	10	6	6
10 to 11	10	6	6
11 to 12	16	4	3
12 to 13	24	2	3
13 to 14	32	2	2
14 to 15	32	2	2
15 to 16	24	3	2
16 to 17	16	3	4
17 to 18	10	6	6
18 to 19	10	6	6
19 to 20	10	6	6
20 to 21	16	3	4
21 to 22	24	2	3
22 to 23	32	2	2
23 to 24	40	2	2
Total No. of train trips per direction per day		70	70

TABLE 1.10 A
Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK
Year: 2031
Configuration: 3 Car
Headway(min): 9

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	1	2
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	9	6	6
9 to 10	9	6	6
10 to 11	9	6	6
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	2	1
14 to 15	32	1	2
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	9	6	6
18 to 19	9	6	6
19 to 20	9	6	6
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	2	1
23 to 24	40	2	2
Total No. of train trips per direction per day		74	74

TABLE 1.11 A
Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK
Year: 2036
Configuration: 3 Car
Headway(min): 8

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	1
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	8	7	8
9 to 10	8	8	7
10 to 11	8	7	8
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	1	2
14 to 15	32	2	1
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	8	8	7
18 to 19	8	7	8
19 to 20	8	8	7
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	1	2
23 to 24	40	2	2
Total No. of train trips per direction per day		83	83

TABLE 1.12 A
Hourly Train Operation Plan for PRAJAPATI NAGAR to AGARSEN CHOWK
Year: 2041
Configuration: 3 Car
Headway(min): 7

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	2	3
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	7	8	9
9 to 10	7	9	8
10 to 11	7	8	9
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	7	9	8
18 to 19	7	8	9
19 to 20	7	9	8
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	3	2
23 to 24	30	2	2
Total No. of train trips per direction per day		99	99

Nagpur Metro Rail Network
Line 2 : East - West Corridor

TABLE 1.7 B
Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR
Year: 2016
Configuration: 3 Car
Headway(min): 6.5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	3	2
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	6.5	9	9
9 to 10	6.5	9	9
10 to 11	6.5	9	9
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	6.5	9	9
18 to 19	6.5	9	9
19 to 20	6.5	9	9
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	2	3
23 to 24	30	2	2
Total No. of train trips per direction per day		102	102

TABLE 1.8 B
Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR
Year: 2021
Configuration: 3 Car
Headway(min): 6

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	3	2
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	6	10	10
9 to 10	6	10	10
10 to 11	6	10	10
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	6	10	10
18 to 19	6	10	10
19 to 20	6	10	10
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	2	3
23 to 24	30	2	2
Total No. of train trips per direction per day		108	108

TABLE 1.9 B
Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR
Year: 2026
Configuration: 3 Car
Headway(min): 5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	4	4
6 to 7	12	5	5
7 to 8	8	8	7
8 to 9	5	12	12
9 to 10	5	12	12
10 to 11	5	12	12
11 to 12	8	8	7
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	8	7	8
17 to 18	5	12	12
18 to 19	5	12	12
19 to 20	5	12	12
20 to 21	8	7	8
21 to 22	12	5	5
22 to 23	16	4	4
23 to 24	20	3	3
Total No. of train trips per direction per day		140	140

TABLE 1.10 B
Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR
Year: 2031
Configuration: 3 Car
Headway(min): 4.5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	3	4
6 to 7	12	5	5
7 to 8	6	10	10
8 to 9	4.5	14	13
9 to 10	4.5	13	14
10 to 11	4.5	14	13
11 to 12	6	10	10
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	6	10	10
17 to 18	4.5	13	14
18 to 19	4.5	14	13
19 to 20	4.5	13	14
20 to 21	6	10	10
21 to 22	12	5	5
22 to 23	16	4	3
23 to 24	20	3	3
Total No. of train trips per direction per day		158	158

TABLE 1.11 B
Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR
Year: 2036
Configuration: 3 Car
Headway(min): 4

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	16	3	3
6 to 7	12	5	5
7 to 8	6	10	10
8 to 9	4	15	15
9 to 10	4	15	15
10 to 11	4	15	15
11 to 12	6	10	10
12 to 13	12	5	5
13 to 14	16	4	3
14 to 15	16	3	4
15 to 16	12	5	5
16 to 17	6	10	10
17 to 18	4	15	15
18 to 19	4	15	15
19 to 20	4	15	15
20 to 21	6	10	10
21 to 22	12	5	5
22 to 23	16	3	3
23 to 24	20	3	3
Total No. of train trips per direction per day		166	166

TABLE 1.12 B

Hourly Train Operation Plan for AGARSEN CHOWK to SUBHASH NAGAR

Year: 2041

Configuration: 3 Car

Headway(min): 3.5

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	12	5	5
6 to 7	10	6	6
7 to 8	5	12	12
8 to 9	3.5	17	17
9 to 10	3.5	17	17
10 to 11	3.5	17	17
11 to 12	5	12	12
12 to 13	10	6	6
13 to 14	12	5	5
14 to 15	12	5	5
15 to 16	10	6	6
16 to 17	5	12	12
17 to 18	3.5	17	17
18 to 19	3.5	17	17
19 to 20	3.5	17	17
20 to 21	5	12	12
21 to 22	10	6	6
22 to 23	12	5	5
23 to 24	15	4	4
Total No. of train trips per direction per day		198	198

Nagpur Metro Rail Network
Line 2 : East - West Corridor

TABLE 1.7 C

Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR

Year: 2016

Configuration: 3 Car

Headway(min): 13

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	48	1	1
6 to 7	40	2	1
7 to 8	20	3	3
8 to 9	13	4	5
9 to 10	13	5	4
10 to 11	13	4	5
11 to 12	20	3	3
12 to 13	40	1	2
13 to 14	48	1	2
14 to 15	48	2	1
15 to 16	40	2	1
16 to 17	20	3	3
17 to 18	13	5	4
18 to 19	13	4	5
19 to 20	13	5	4
20 to 21	20	3	3
21 to 22	40	1	2
22 to 23	48	1	1
23 to 24	60	1	1
Total No. of train trips per direction per day		51	51

TABLE 1.8 C

Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR

Year: 2021

Configuration: 3 Car

Headway(min): 12

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	48	1	1
6 to 7	40	2	1
7 to 8	20	3	3
8 to 9	12	5	5
9 to 10	12	5	5
10 to 11	12	5	5
11 to 12	20	3	3
12 to 13	40	1	2
13 to 14	48	2	1
14 to 15	48	1	2
15 to 16	40	2	1
16 to 17	20	3	3
17 to 18	12	5	5
18 to 19	12	5	5
19 to 20	12	5	5
20 to 21	20	3	3
21 to 22	40	1	2
22 to 23	48	1	1
23 to 24	60	1	1
Total No. of train trips per direction per day		54	54

TABLE 1.9 C
Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR
Year: 2026
Configuration: 3 Car
Headway(min): 10

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	2
6 to 7	24	3	2
7 to 8	16	4	3
8 to 9	10	6	6
9 to 10	10	6	6
10 to 11	10	6	6
11 to 12	16	4	3
12 to 13	24	2	3
13 to 14	32	2	2
14 to 15	32	2	2
15 to 16	24	3	2
16 to 17	16	3	4
17 to 18	10	6	6
18 to 19	10	6	6
19 to 20	10	6	6
20 to 21	16	3	4
21 to 22	24	2	3
22 to 23	32	2	2
23 to 24	40	2	2
Total No. of train trips per direction per day		70	70

TABLE 1.10 C
Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR
Year: 2031
Configuration: 3 Car
Headway(min): 9

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	1	2
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	9	6	6
9 to 10	9	6	6
10 to 11	9	6	6
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	2	1
14 to 15	32	1	2
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	9	6	6
18 to 19	9	6	6
19 to 20	9	6	6
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	2	1
23 to 24	40	2	2
Total No. of train trips per direction per day		74	74

TABLE 1.11 C
Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR
Year: 2036
Configuration: 3 Car
Headway(min): 8

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	32	2	1
6 to 7	24	3	2
7 to 8	12	5	5
8 to 9	8	7	8
9 to 10	8	8	7
10 to 11	8	7	8
11 to 12	12	5	5
12 to 13	24	2	3
13 to 14	32	1	2
14 to 15	32	2	1
15 to 16	24	3	2
16 to 17	12	5	5
17 to 18	8	8	7
18 to 19	8	7	8
19 to 20	8	8	7
20 to 21	12	5	5
21 to 22	24	2	3
22 to 23	32	1	2
23 to 24	40	2	2
Total No. of train trips per direction per day		83	83

TABLE 1.12 C
Hourly Train Operation Plan for SUBHASH NAGAR to LOKMANYA NAGAR
Year: 2041
Configuration: 3 Car
Headway(min): 7

Time of Day	Headway in Minutes	No. of Trains per day	
		UP	DN
5 to 6	24	2	3
6 to 7	20	3	3
7 to 8	10	6	6
8 to 9	7	8	9
9 to 10	7	9	8
10 to 11	7	8	9
11 to 12	10	6	6
12 to 13	20	3	3
13 to 14	24	3	2
14 to 15	24	2	3
15 to 16	20	3	3
16 to 17	10	6	6
17 to 18	7	9	8
18 to 19	7	8	9
19 to 20	7	9	8
20 to 21	10	6	6
21 to 22	20	3	3
22 to 23	24	3	2
23 to 24	30	2	2
Total No. of train trips per direction per day		99	99

TABLE 2.1
Line 1 : North - South Corridor
PHPDT for the Year 2016

S.No	From Station	To Station	Maximum PHPDT	Directional Split to KHAPARI	Directional Split to AUTOMOTIVE SQRE
1	AUTOMOTIVE SQRE	NARI ROAD	2561	50%	50%
2	NARI ROAD	INDORA CHOWK	3754	50%	50%
3	INDORA CHOWK	KADVI CHOWK	4885	50%	50%
4	KADVI CHOWK	GADDI GODAM SQRE	6039	50%	50%
5	GADDI GODAM SQRE	KASTURCHAND PARK	6059	50%	50%
6	KASTURCHAND PARK	ZERO MILE	7326	50%	50%
7	ZERO MILE	SITABURDI	8272	50%	50%
8	SITABURDI	CONGRESS NAGAR	10089	50%	50%
9	CONGRESS NAGAR	RAHATE COLONY	5288	50%	50%
10	RAHATE COLONY	AJNI SQUARE	4513	50%	50%
11	AJNI SQUARE	CHHATRAPATI SQUARE	3935	50%	50%
12	CHHATRAPATI SQUARE	JAIPRAKASH NAGAR	3561	50%	50%
13	JAIPRAKASH NAGAR	UJWAL NAGAR	3289	50%	50%
14	UJWAL NAGAR	AIRPORT	2939	50%	50%
15	AIRPORT	NEW AIRPORT	2735	50%	50%
16	NEW AIRPORT	KHAPARI	2140	50%	50%

TABLE 2.2
Line 2 : East - West Corridor
PHPDT for the Year 2016

S.No	From Station	To Station	Maximum PHPDT	Directional Split to LOKMANYA NAGAR	Directional Split to PRAJAPATI NAGAR
1	PRAJAPATI NAGAR	VAISHNO DEVI CHOWK	481	50%	50%
2	VAISHNO DEVI CHOWK	AMBEDKAR CHOWK	903	50%	50%
3	AMBEDKAR CHOWK	TELEPHONE EXCHANGE	1378	50%	50%
4	TELEPHONE EXCHANGE	CHITTAR OLI CHOWK	2919	50%	50%
5	CHITTAR OLI CHOWK	AGARSEN CHOWK	4090	50%	50%
6	AGARSEN CHOWK	DOSAR VAISYA CHOWK	4843	50%	50%
7	DOSAR VAISYA CHOWK	NAGPUR RAILWAY STATION	5288	50%	50%
8	NAGPUR RAILWAY STATION	SITABURDI (INTERCHANGE)	7341	50%	50%
9	SITABURDI (INTERCHANGE)	JHANSI RANI SQUARE	6141	50%	50%
10	JHANSI RANI SQUARE	INSTITUTE OF ENGINEERS	4038	50%	50%
11	INSTITUTE OF ENGINEERS	SHANKAR NAGAR SQUARE	7746	50%	50%
12	SHANKAR NAGAR SQUARE	LAD CHOWK	6114	50%	50%
13	LAD CHOWK	DHARMPETH COLLEGE	5601	50%	50%
14	DHARMPETH COLLEGE	SUBHASH NAGAR	4072	50%	50%
15	SUBHASH NAGAR	RACHNA RING ROAD JN.	3787	50%	50%
16	RACHNA RING ROAD JN.	VASDEV NAGAR	3494	50%	50%
17	VASDEV NAGAR	BANSI NAGAR	2714	50%	50%
18	BANSI NAGAR	LOKMANYA NAGAR	2212	50%	50%

TABLE 3.1
Vehicle Kilometer
Nagpur Metro Rail Network
Line 1 : North - South Corridor

Year	2016		2021		2026		2031		2036		2041	
Section	<i>AUTOMOTIVE SQRE to CONGRESS NAGAR</i>	<i>CONGRESS NAGAR to KHAPARI</i>	<i>AUTOMOTIVE SQRE to CONGRESS NAGAR</i>	<i>CONGRESS NAGAR to KHAPARI</i>	<i>AUTOMOTIVE SQRE to CONGRESS NAGAR</i>	<i>CONGRESS NAGAR to KHAPARI</i>	<i>AUTOMOTIVE SQRE to CONGRESS NAGAR</i>	<i>CONGRES S NAGAR to KHAPARI</i>	<i>AUTOMOTIV E SQRE to CONGRESS NAGAR</i>	<i>CONGRES S NAGAR to KHAPARI</i>	<i>AUTOMOTI VE SQRE to CONGRES S NAGAR</i>	<i>CONGRES S NAGAR to KHAPARI</i>
Section Length	7.90	10.56	7.90	10.56	7.90	10.56	7.90	10.56	7.90	10.56	7.90	10.56
No of cars per Train	3	3	3	3	3	3	3	3	3	3	3	3
No of working Days in a year	340	340	340	340	340	340	340	340	340	340	340	340
Number of Trains per day each Way	108	54	138	69	158	79	168	84	200	100	216	108
Daily Train -KM	1706	1141	2180	1458	2496	1669	2653	1775	3159	2113	3412	2282
Annual Train - KM (10⁵)	5.80	3.88	7.41	4.96	8.48	5.67	9.02	6.03	10.74	7.18	11.60	7.76
Annual Vehicle - KM (10⁵)	17.40	11.64	22.23	14.87	25.45	17.02	27.07	18.10	32.22	21.55	34.80	23.27

TABLE 3.2
Vehicle Kilometer
Nagpur Metro Rail Network
Line 2 : East - West Corridor

Year	2016			2021			2026			2031			2036			2041		
Section	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR	PRAJAPATI NAGAR to AGARSEN CHOWK	AGARSEN CHOWK to SUBHASH NAGAR	SUBHASH NAGAR to LOKMANYA NAGAR
Section Length	4.76	8.19	4.48	4.76	8.19	4.48	4.76	8.19	4.48	4.76	8.19	4.48	4.76	8.19	4.48	4.76	8.19	4.48
No of cars per Train	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
No of working Days in a year	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340	340
Number of Trains per day each Way	51	102	51	54	108	54	70	140	70	74	158	74	83	166	83	99	198	99
Daily Train -KM	485	1670	457	514	1768	484	666	2292	627	704	2587	663	790	2718	743	942	3242	886
Annual Train - KM (10 ⁵)	1.65	5.68	1.55	1.75	6.01	1.64	2.27	7.79	2.13	2.40	8.80	2.25	2.69	9.24	2.53	3.20	11.02	3.01
Annual Vehicle - KM (10 ⁵)	4.95	17.04	4.66	5.24	18.04	4.93	6.80	23.38	6.39	7.19	26.39	6.76	8.06	27.73	7.58	9.61	33.07	9.04

Rake Requirement
Nagpur Metro Rail Network

Line 1 : North - South Corridor, Year : 2016

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	12	6	1	1	8	3	24
Automotive Sqre to Congress Nagar	7.90	32.00	12	3	0	0	3	3	9
				9	1	1	11		33

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	6	11 Rakes of 3 cars	33
Congress Nagar to Khapari	12		

Total Turn Round Time(min) 6

Line 1 : North - South Corridor, Year : 2021

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	10	7	1	1	9	3	27
Automotive Sqre to Congress Nagar	7.90	32.00	10	4	0	0	4	3	12
				11	1	1	13		39

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	5	13 Rakes of 3 cars	39
Congress Nagar to Khapari	10		

Total Turn Round Time(min) 6

Line 1 : North - South Corridor, Year : 2026

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	9	8	1	1	10	3	30
Automotive Sqre to Congress Nagar	7.90	32.00	9	4	0	1	5	3	15
				12	1	2	15		45

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	4.5	15 Rakes of 3 cars	45
Congress Nagar to Khapari	9		

Total Turn Round Time(min) 6

Rake Requirement
Nagpur Metro Rail Network

Line 1 : North - South Corridor, Year : 2031

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	8	9	1	1	11	3	33
Automotive Sqre to Congress Nagar	7.90	32.00	8	5	0	1	6	3	18
				14	1	2	17		51

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	4	17 Rakes of 3 cars	51
Congress Nagar to Khapari	8		

Total Turn Round Time(min) 6

Line 1 : North - South Corridor, Year : 2036

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	7	11	1	1	13	3	39
Automotive Sqre to Congress Nagar	7.90	32.00	7	6	0	1	7	3	21
				17	1	2	20		60

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	3.5	20 Rakes of 3 cars	60
Congress Nagar to Khapari	7		

Total Turn Round Time(min) 6

Line 1 : North - South Corridor, Year : 2041

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Automotive Sqre to Khapari	18.46	34.00	6	12	1	1	14	3	42
Automotive Sqre to Congress Nagar	7.90	32.00	6	6	0	1	7	3	21
				18	1	2	21		63

Note: Reversal facility required at Congress Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Automotive Sqre to Congress Nagar	3	21 Rakes of 3 cars	63
Congress Nagar to Khapari	6		

Total Turn Round Time(min) 6

Rake Requirement Nagpur Metro Rail Network

Line 2 : East - West Corridor, Year : 2016

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	13	6	1	1	8	3	24
Agrasen Chowk to Subhash Nagar	8.19	29.00	13	4	0	0	4	3	12
				10	1	1	12		36

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	6.5	12 Rakes of 3 cars	36
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	13		

Total Turn Round Time(min) 6

Line 2 : East - West Corridor, Year : 2021

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	12	7	1	1	9	3	27
Agrasen Chowk to Subhash Nagar	8.19	29.00	12	4	0	0	4	3	12
				11	1	1	13		39

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	6	13 Rakes of 3 cars	39
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	12		

Total Turn Round Time(min) 6

Line 2 : East - West Corridor, Year : 2026

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	10	8	1	1	10	3	30
Agrasen Chowk to Subhash Nagar	8.19	29.00	10	4	0	1	5	3	15
				12	1	2	15		45

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	5	15 Rakes of 3 cars	45
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	10		

Total Turn Round Time(min) 6

Rake Requirement Nagpur Metro Rail Network

Line 2 : East - West Corridor, Year : 2031

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	9	9	1	1	11	3	33
Agrasen Chowk to Subhash Nagar	8.19	29.00	9	5	0	1	6	3	18
				14	1	2	17		51

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	4.5	17 Rakes of 3 cars	51
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	9		

Total Turn Round Time(min) **6**

Line 2 : East - West Corridor, Year : 2036

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	8	10	1	1	12	3	36
Agrasen Chowk to Subhash Nagar	8.19	29.00	8	5	0	1	6	3	18
				15	1	2	18		54

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	4	18 Rakes of 3 cars	54
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	8		

Total Turn Round Time(min) **6**

Line 2 : East - West Corridor, Year : 2041

Section	Distance (kms)	Schedule Speed in kmph	Headway (min)	Rake Requirement					
				Bare	Traffic Reserve	R&M	Total No of Rakes	No. of Cars per rake	No. of Cars
Prajapati Nagar to Lokmanya Nagar	17.42	30.00	7	11	1	1	13	3	39
Agrasen Chowk to Subhash Nagar	8.19	29.00	7	6	0	1	7	3	21
				17	1	2	20		60

Note: Reversal facility required at Agrasen Chowk and Subhash Nagar.

Above train Operation resulting in:

Section	Effective headway	No. of Rakes	No. of Car
Agrasen Chowk to Subhash Nagar	3.5	20 Rakes of 3 cars	60
Prajapati Nagar to Agrasen Chowk and Subhash Nagar to Lokmanya Nagar	7		

Total Turn Round Time(min) **6**