

## NAGPUR ROAD PLAN OR FIRST 20-YEAR ROAD PLAN

$$(i) \quad (NH + SH + MDR)_{in \text{ km}} = \left[ \frac{A}{8} + \frac{B}{32} + 1.6N + 8T \right] + D - R$$

where,

NH + SH + MDR = Total length of first category or metalled roads for national & state highways & major district roads in km.

A = Agricultural area in km<sup>2</sup>

B = Non-agricultural area in km<sup>2</sup>

N = Number of towns & villages with population range 2001- 5000

T = Number of towns & villages with population over 5000.

D = Development allowance of 15% of road length calculated to be provided for agricultural & industrial development during the next 20 years.

R = Existing length of railway track in km.

$$(ii) \quad (ODR + VR)_{in \text{ km}} = [0.32V + 0.8Q + 1.6P + 3.2S + D]$$

where,

ODR + VR = Total length of second category roads for other district roads & village roads in km.

V = Number of villages with population range 500 or less.

Q = Number of villages with population range 501-1000.

P = Number of villages with population range 1001-2000.

S = Number of villages with population range 2001-5000.

D = Development allowance of 15% for next 20 years.

SECOND TWENTY YEAR ROAD PLAN (1961-81)  
(BOMBAY ROAD PLAN)

$$(i) \quad NH = \left[ \frac{A}{64} + \frac{B}{80} + \frac{C}{96} \right] + [32K + 8M] + D$$

where, NH = Length of national highways in km.

$$(ii) \quad (NH + SH)_{in \text{ km}} = \left[ \frac{A}{20} + \frac{B}{24} + \frac{C}{32} \right] + [48K + 24M + 11.2N + 1.6P] + D$$

where, (NH + SH)<sub>in km</sub> = Length of national & state highway in km.

$$(iii) \quad (NH + SH + MDR)_{in \text{ km}} = \left[ \frac{A}{8} + \frac{B}{16} + \frac{C}{24} \right] + [48K + 24M + 11.2N + 9.6P + 6.4Q + 2.4R] + D$$

where, (NH + SH + MDR)<sub>in km</sub> = Length of national & state highway & major district road.

$$(iv) \quad (NH + SH + MDR + ODR)_{in \text{ km}} = \left[ \frac{3A}{16} + \frac{3B}{32} + \frac{C}{16} \right] + [48K + 24M + 11.2N + 9.6P + 12.8Q + 4R + 0.8S + 0.32T] + D$$

where, (NH + SH + MDR + ODR)<sub>in km</sub> = Length of national & state highway & major district road & other district road.

$$(v) \quad (NH + SH + MDR + ODR + Village road)_{in \text{ km}} = \left[ \frac{A}{4} + \frac{B}{8} + \frac{C}{12} \right] + [48K + 24M + 11.2N + 9.6P + 12.8Q + 5.9R + 1.6S + 0.64T + 0.2V] + D$$

where,

A = Developed & agricultural areas in km<sup>2</sup>

B = Semi-developed area in km<sup>2</sup>

C = Undeveloped area in km<sup>2</sup>

K = Number of towns with population over 1,00,000

M = Number of towns with population range 1,00,000 – 50,000

N = Number of towns with population range 50,000 – 20,000

P = Number of towns with population range 20,000 – 10,000

Q = Number of towns with population range 10,000 – 5,000

R = Number of towns with population range 5,000 – 2,000

S = Number of towns with population range 2,000 – 1,000

T = Number of towns with population range 1,000 – 500

V = Number of towns with population range below 500.

D = Development allowance of 5% of road length calculated for further development & other unforeseen factors.



## HIGHWAY DEVELOPMENT AND PLANNING

### Some Important Years

1.	Jayakar committee	Formed in Nov. 1927 Recommendation Feb. 1928
2.	Central road fund	1929
3.	Indian road congress	1934
4.	Motor vehicle act	1939
5.	First 20 years road plan (Nagpur road plan)	1943-1963 (but it finished in 1961)
6.	CRRI (Central road research institute)	1950
7.	Second 20 year road plan (Bombay road plan)	1961-1981
8.	Third 20 year road plan (Lucknow road plan)	1981-2001
9.	National highway act	1956

## IMPORTANT RECOMMENDATIONS

### Jayakar Committee

1. Road development should be considered as a matter of national interest.
2. Tax on petrol should be levied to collect fund for road development work.

Result - Central road fund was formed in 1928.

3. A semi official technical body should be formed to act as advisory body on various aspect of roads.

Result - IRC was formed in 1934.

4. A research organisation should be instituted to carryout research and development work.

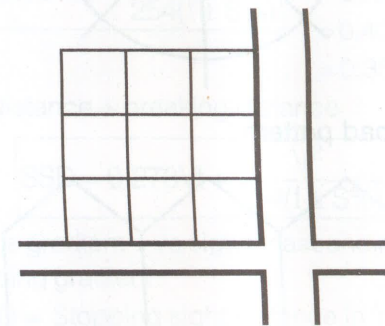
Result - CRRI was formed in 1950.

## THREE ROAD DEVELOPMENT PLAN

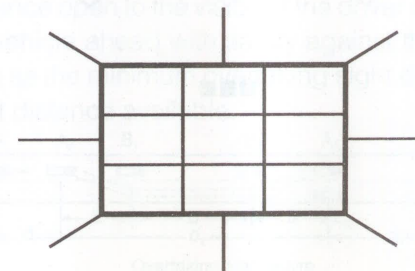
	Ist 20 year road plan	IInd 20 year road plan	IIIrd 20 year road plan
1. Venue	Nagpur	Bombay	Lucknow
2. Year	1943	1961	1921
3. Target at end	16 km/100 km <sup>2</sup> area	32 km/100 km <sup>2</sup> area	82 km/100 km <sup>2</sup> area
4. Total road length target	5.29 lakhs km	10.57 lakhs km	27.02 lakhs km
5. Outlay	448 crore	5200 crore	—
6. Other points	Roads are divided into 5 categories (i) NH (ii) SH (iii) MDR (iv) ODR (v) VR	Expressway was added	Roads are divided into three major categories (i) Primary — { Express ways NH (ii) Secondary — { SH MDR (iii) ODR & VR

## DIFFERENT ROAD PATTERNS

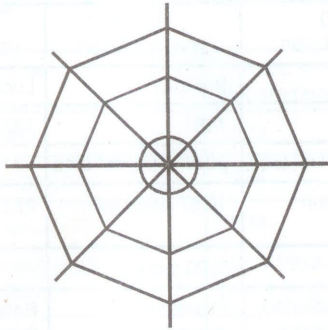
### 1. Rectangular and block pattern



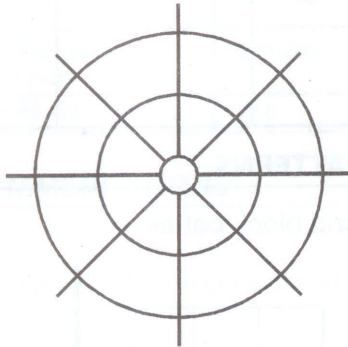
### 2. Star and block pattern



3. Star and grid pattern (adopted in India)



4. Star and circular pattern



5. Hexagonal road pattern

