

HIGHWAY

✓ Highway - ✓	5-10	Q
✓ Railway -	1-2	Q
X Tunnel -	0-1	Q
X Airport -	0-1	Q

MPPEB - 10-15%

SSEJE - 5-7 Q

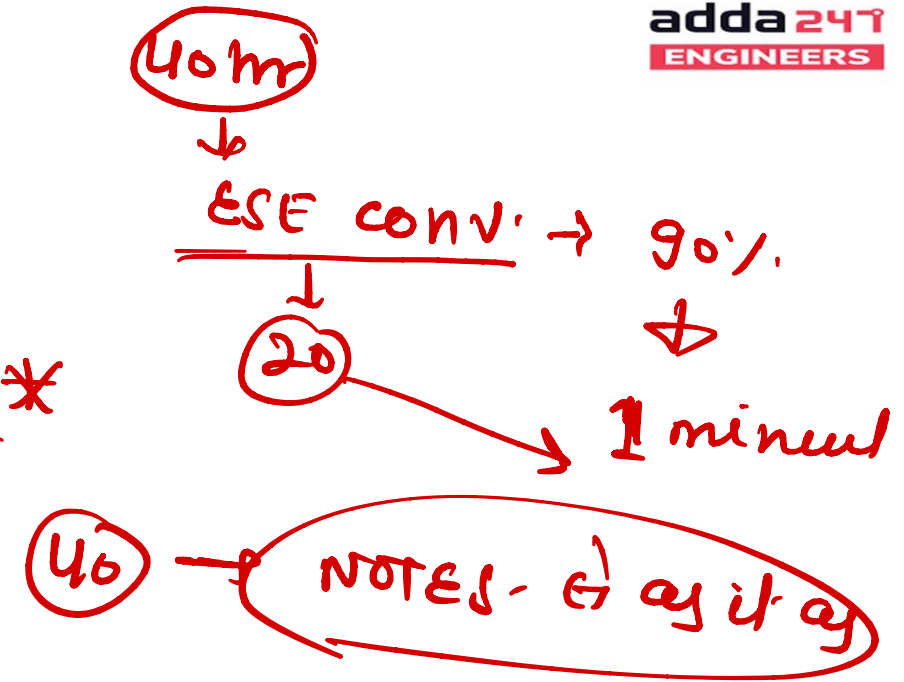
UPSSSCJE - 10-20 Q

ESE - 15-20 Q

Mains - SSC JE = 20 NO'S
ESE = 40 NO'S

CHAPTER -

- ① Introduction * *
- ② Highway geometric Design * * *
- ③ Traffic engg * *
- ④ Pavement design * * * *
- ⑤ Pavement material * * * *
- ⑥ Railway engg.



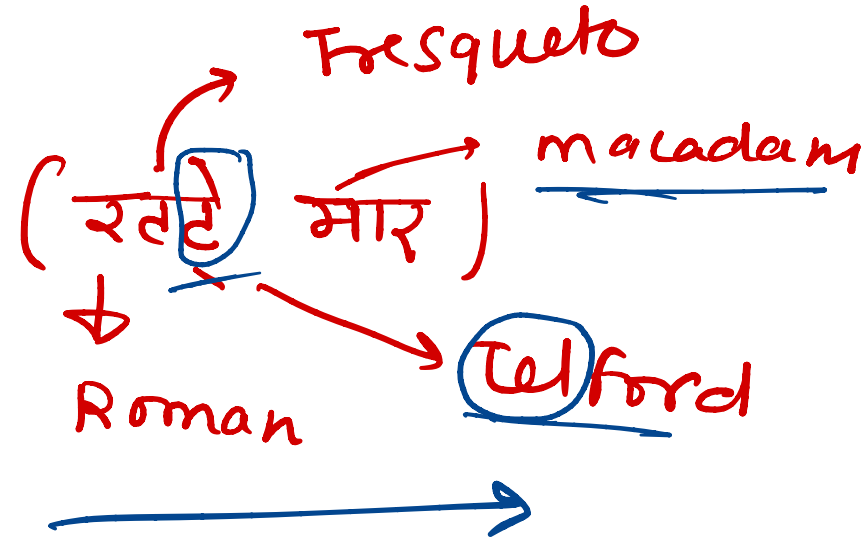
INTRODUCTION -

Development of Road -

They are classify in 4 Stage

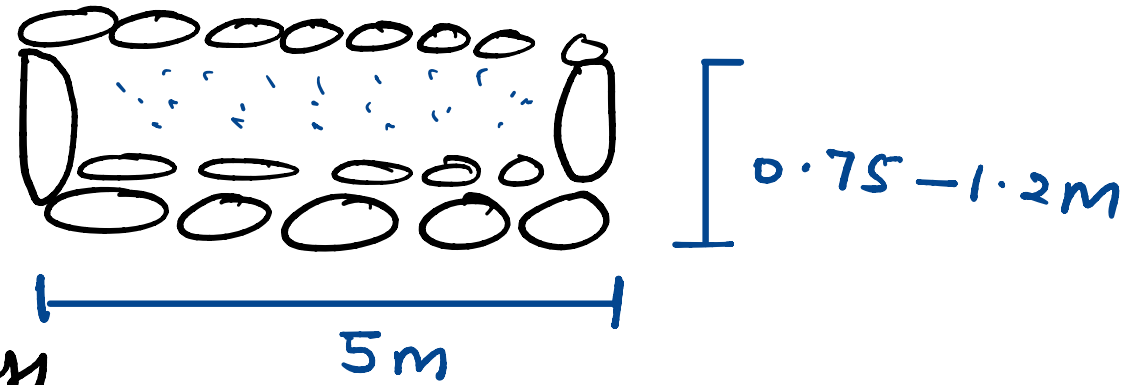
- ① Roman Road (400 B.C)
- ② Fresqueto Road (1716)
- ③ Telford construction (1757 - 1834)
- ④ Macadam Road (1836)

- WBM
- WMM (wet mix macadam)
- BM (bitumen macadam)



① Roman Road - (400 BC) X

During this civilisation many
Road are built of strong
Block of construction thickness

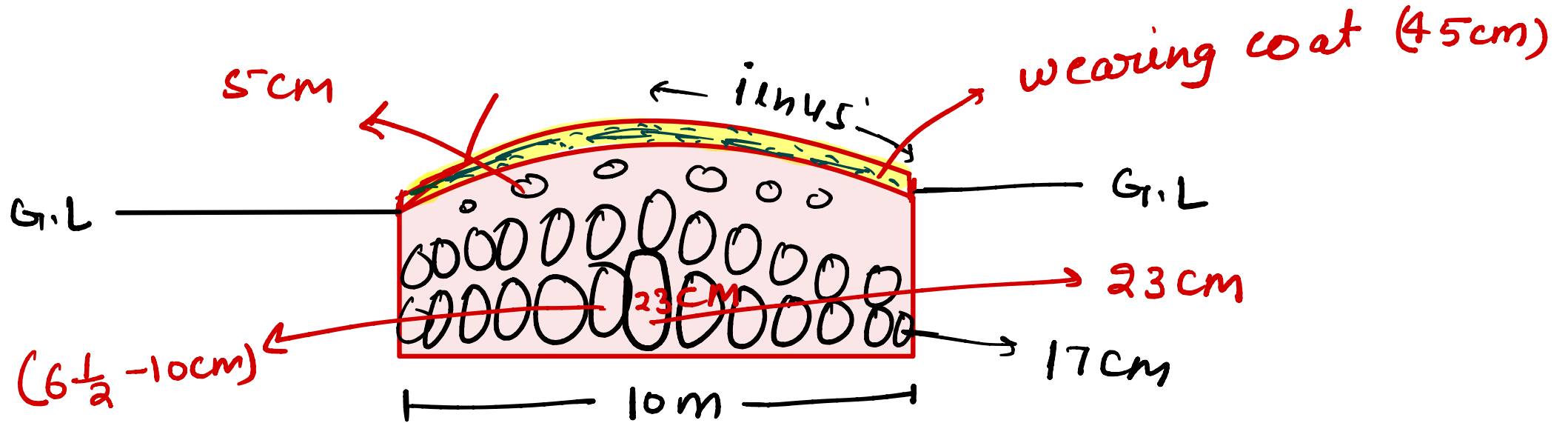


↳ road are constructed straight regardless of gradient

② Tresqueto construction (1716) ×

The main feature of this proposal was that the thickness of construction need to be order of 30cm & he give some suggestion for drainage problem.

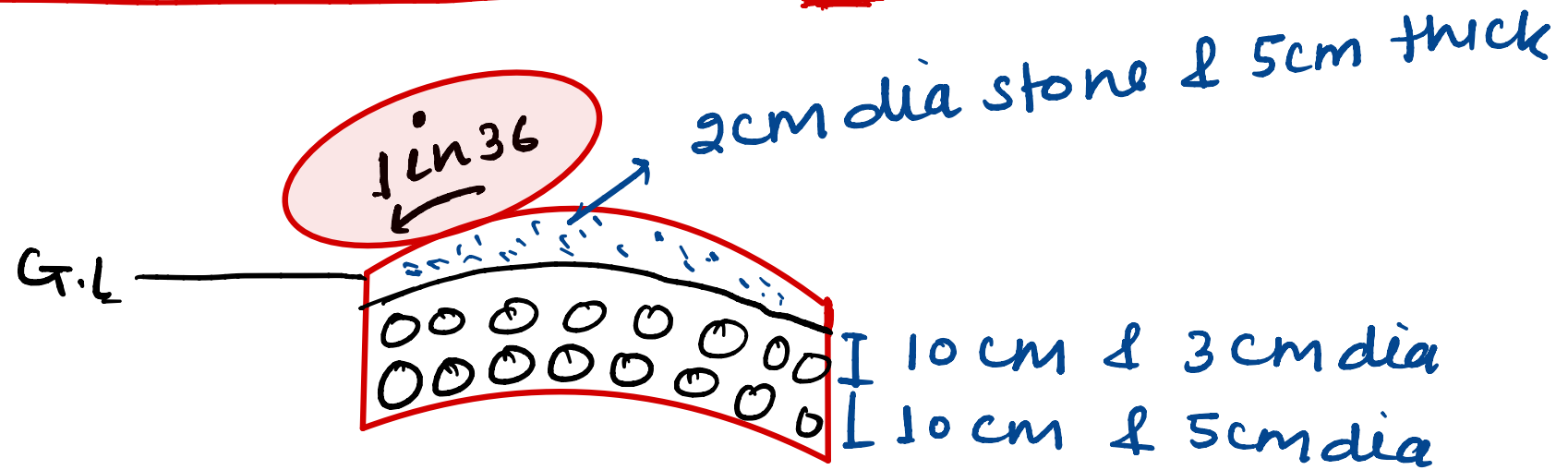
③ Telford Road - (1757 - 1834)



→ Camber - 1:45

→ He was the 1st Person who provided camber

④ Macadam construction (1036)



- He was 1st person who suggested that heavy foundation stone are not required to be placed at bottom of layer
- For binding material - **stone dust**

- WBM are suitable if traffic does not exceed - 2000 ton
- The plasticity of binding material in WBM for base & sub base should be less than 6%.

Various committees -

- ① Jayakar committee - 1927 → (1928)
- ② CRF - 1929

③ CRD - 1930

④ IRC - 1934

⑤ motor vehicle act - 1939 (1938 - बना था)

⑥ CRRF - 1950

⑦ National vehicle act - 1956

⑧ BRD - 1960

⑨ NHAI - 1988

↓
New delhi

→ PWD — Dalhousi — 1865

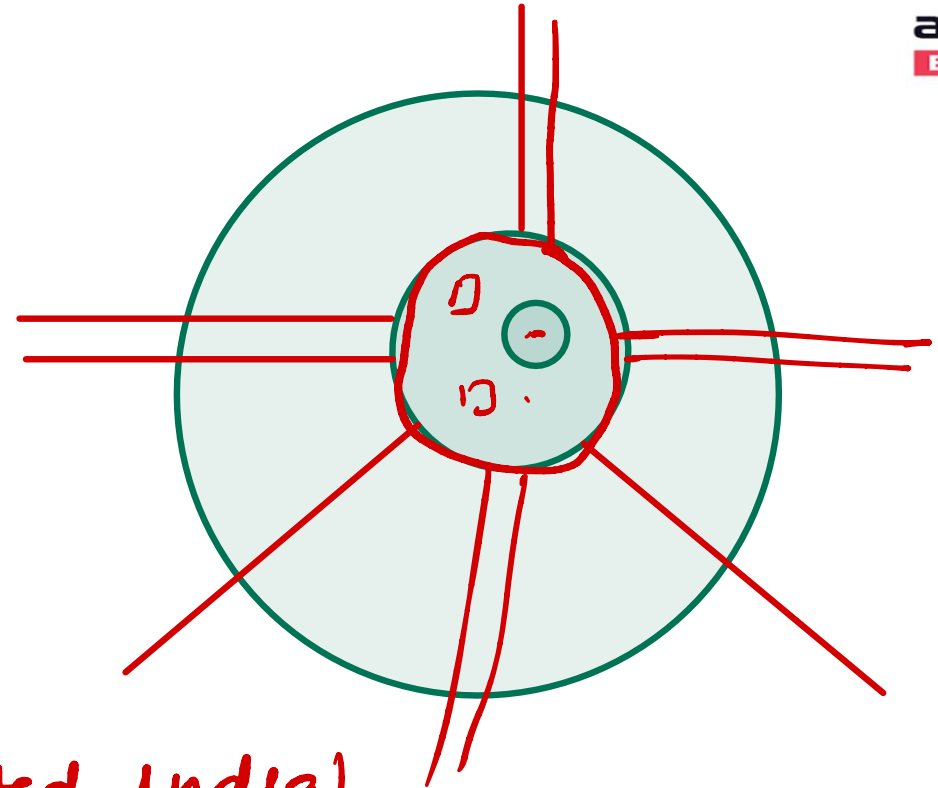
→ GT Road - Sher Shah Suri - 1540 - 45
(Lahore to Kolkata)

NOTE - The inventor of road marking as a building
science - Sully

Type of Road Pattern

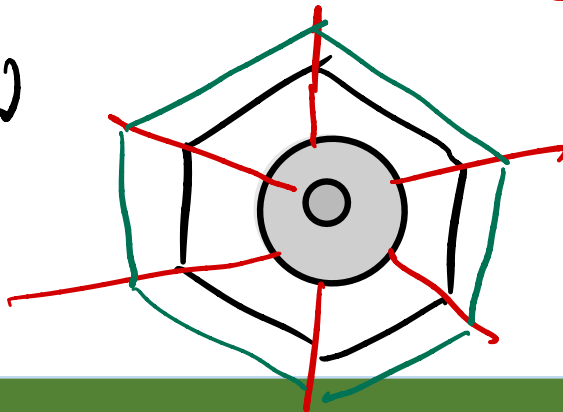
① Circular & Radial Pattern

eg. Connaught Place



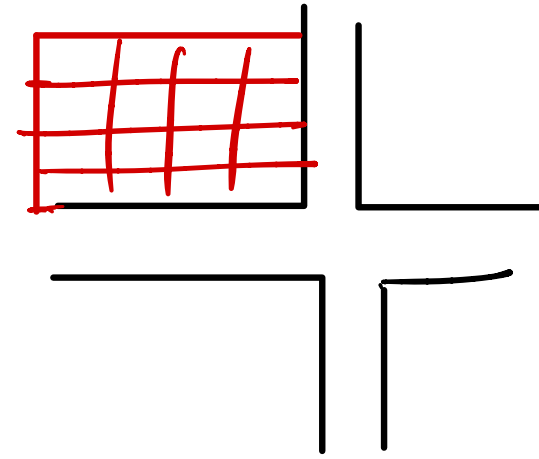
② Star & Grid Pattern - (adopted India)

(Nagpur Road Pattern)

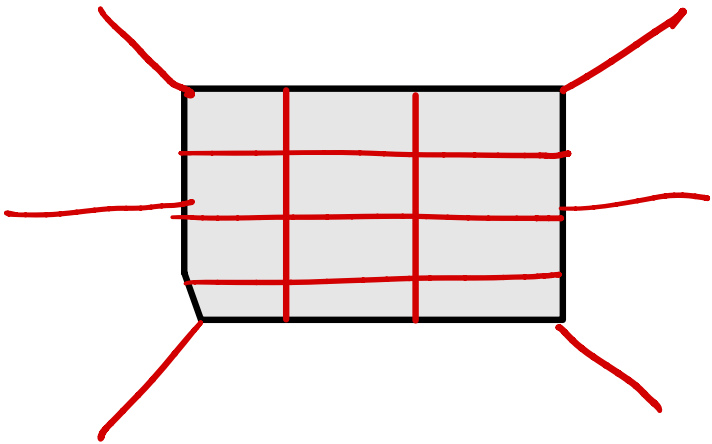


③ Rectangular & Block Pattern -

→ Chandigarh

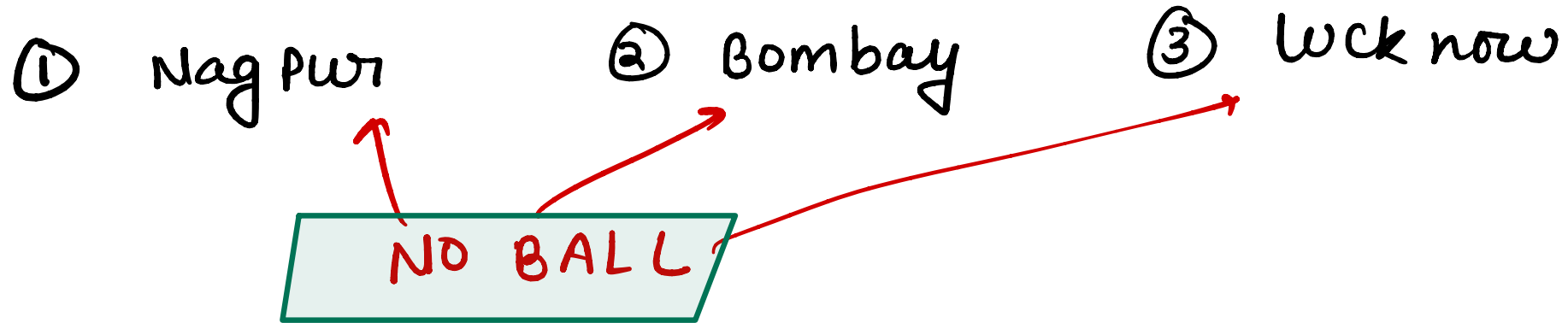


④ Star & Block Pattern -



Three Road development Plan -

OR (20 year Plan)



① Nagpur Road Plan - (1943-61)

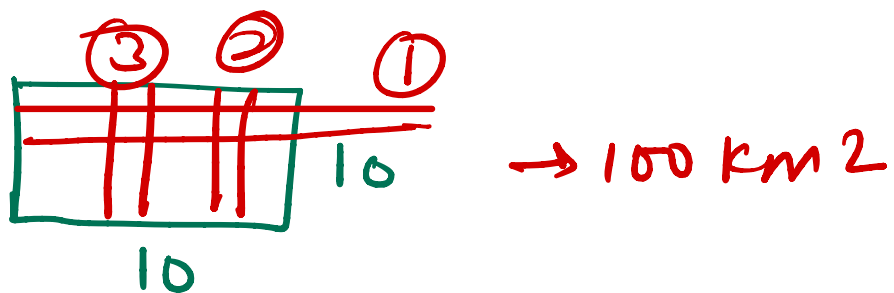
① Acc. to this plan road are classify 5 classes

① NH ② SH ③ MDR ④ ODR ⑤ VR

- Road density of $16 \text{ km per } 100 \text{ km}^2$
- 2 lakh km of Road across the country within 20 years
- Acc to IRC width formation of NH hard rock cutting

is -7.9 m

VR -2.45 m



② Bombay Plan - (1961-01)

- Road density - $32 \text{ km}/100 \text{ km}^2$
- Totally focus on Tax
- Constructed 1600 km^2 expressway
- Not included Railway

③ WCKnow Road Plan - (1981-2001)

① Road density - 02 km/100 km²

② Square grid

③ Road is divided 3 major categories

① Primary - Expressway + NH
(2000 km²) (600 km²)

② Secondary - SH + MDR

③ Tertiary - ODR + VR

$$\text{Length of N.H} = \frac{\text{Area (km}^2\text{)}}{50}$$

$$\text{S.H} = \frac{A}{25}$$

$$\text{MDR} = \frac{A}{12.5}$$