

HIGHWAY GEOMETRIC DESIGN-I

Geometric Design of Highway Deals with following elements:

1. Cross section elements
2. Sight distance considerations
3. Horizontal alignment details
4. Vertical alignment details
5. Intersection elements

Design Controls and Criteria:

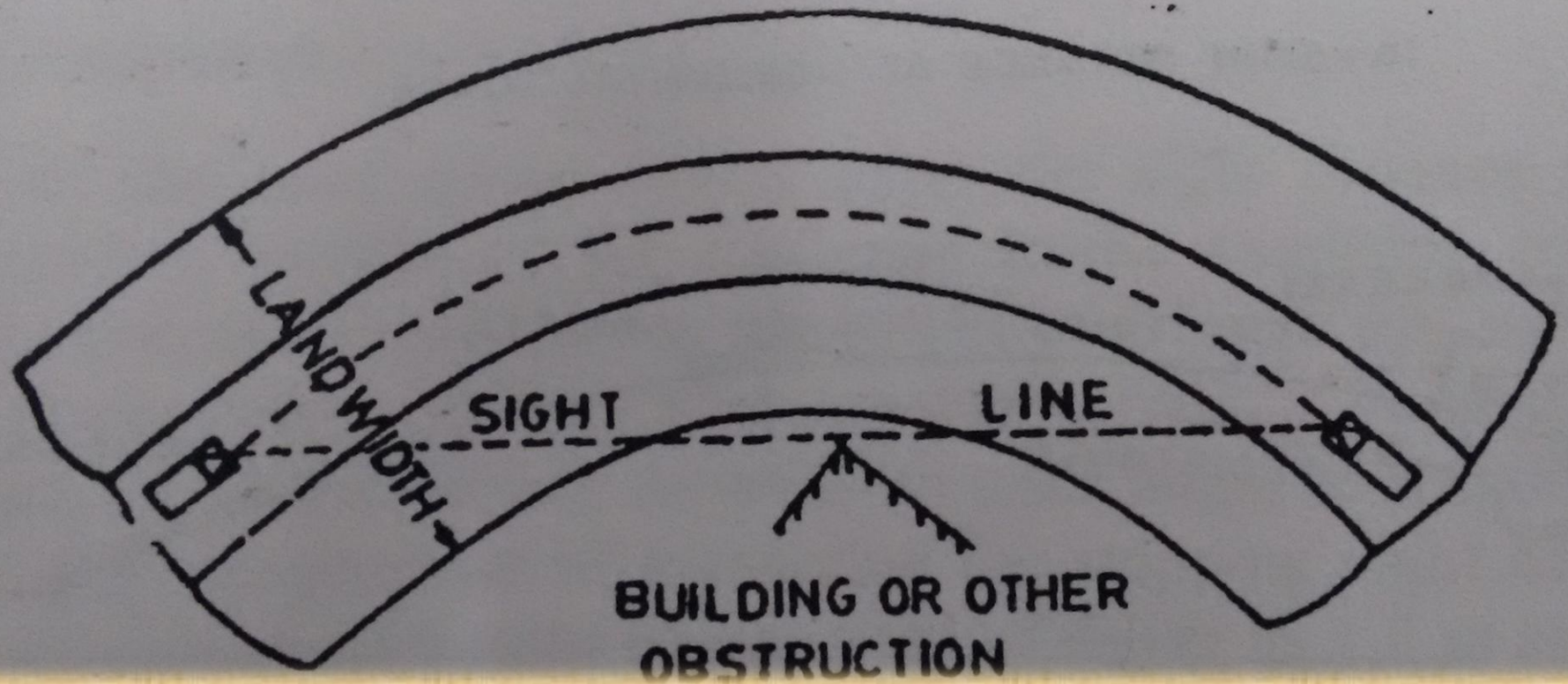
The important factors which control geometric elements are:

1. Design Speed
2. Topography
3. Traffic factors
4. Design hourly volume & Capacity
5. Environmental and Other factors

Right of Way

It is the area of land acquired for the road along its alignment. It depends upon following things.

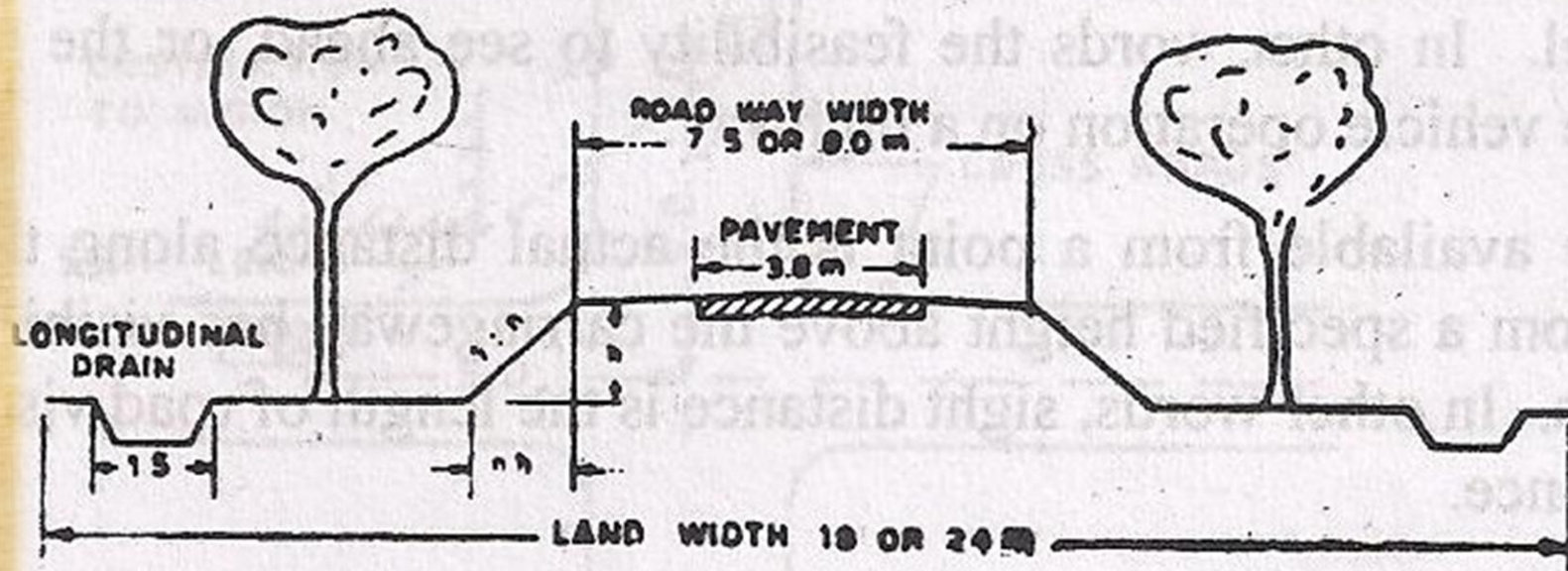
- Width of formation depending on the category of highway & width of road margins.
- Height of embankment or depth of cutting
- Side slopes of embankment or cutting
- Drainage systems and their size
- Sight distance consideration on horizontal curves
- Reserve land for future widening is to be planned.



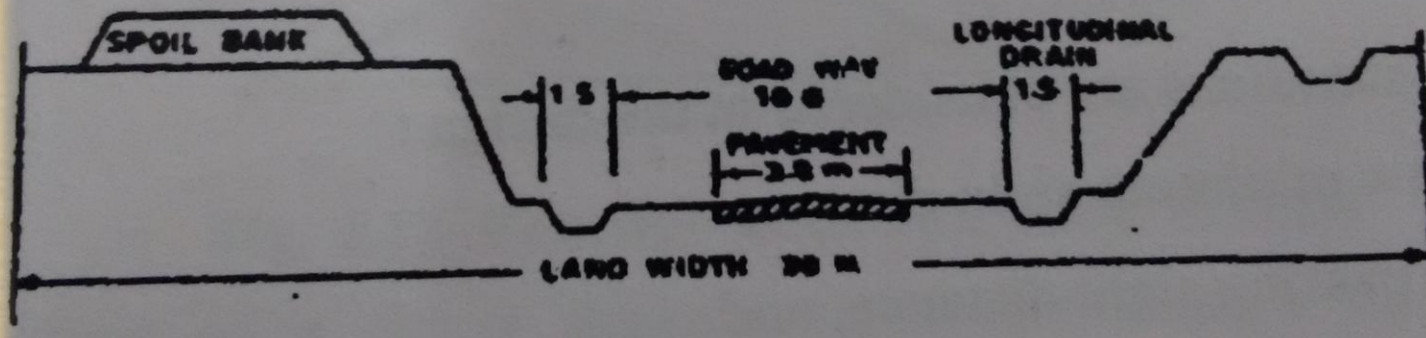
Sl. No.	Road classification	Plain and rolling terrain				Mountainous and steep terrain	
		Open areas		Built-up areas		Open areas	Built-up areas
		Normal	Range	Normal	Range	Normal	Normal
1.	National and State Highways	45	30-60	30	30-60	24	20
2.	Major District Roads	25	25-30	20	15-25	18	15
3.	Other District Roads	15	15-5	15	15-20	15	12
4.	Village Roads	12	12-18	10	10-15	9	9

Recommended Land Width for different classes of rural roads

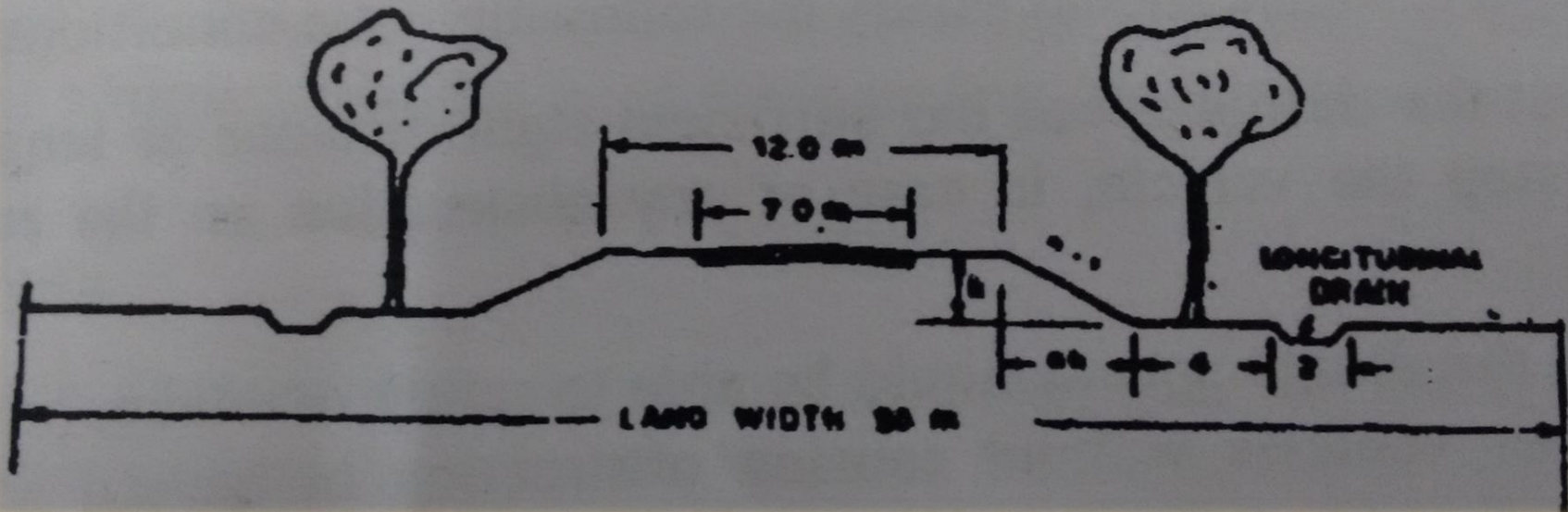
Typical Cross Sections of Roads

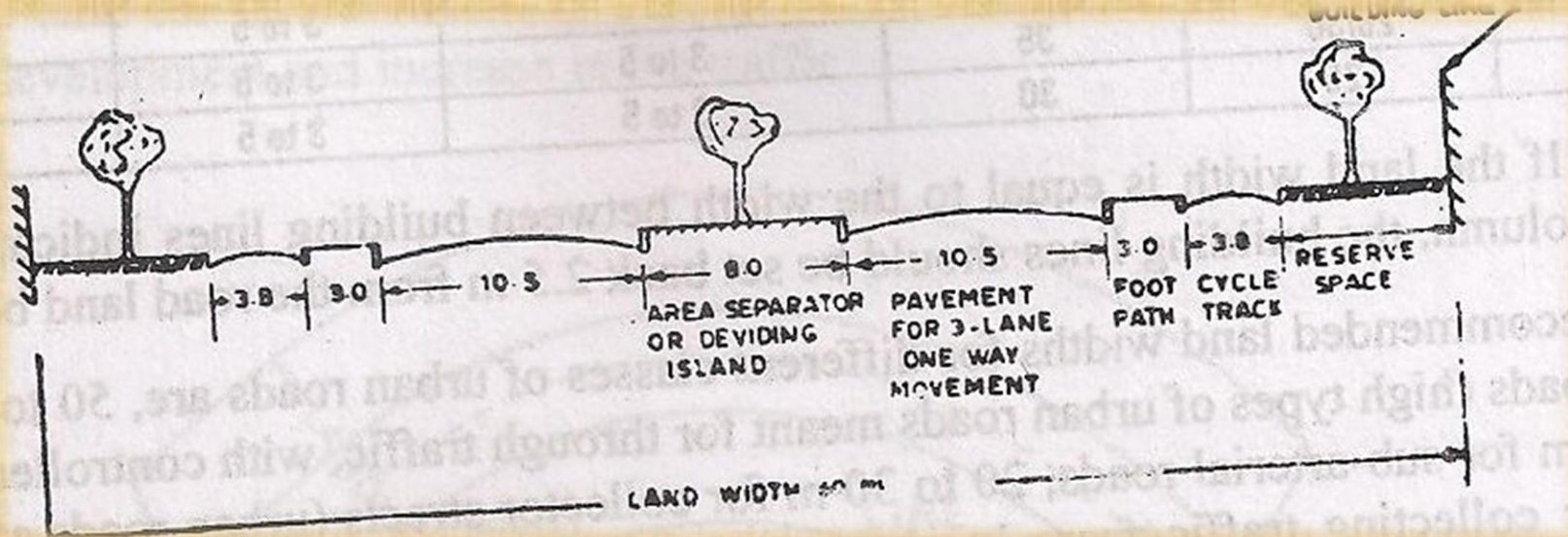


Cross Section of VR or ODR in Embankment in Rural Area

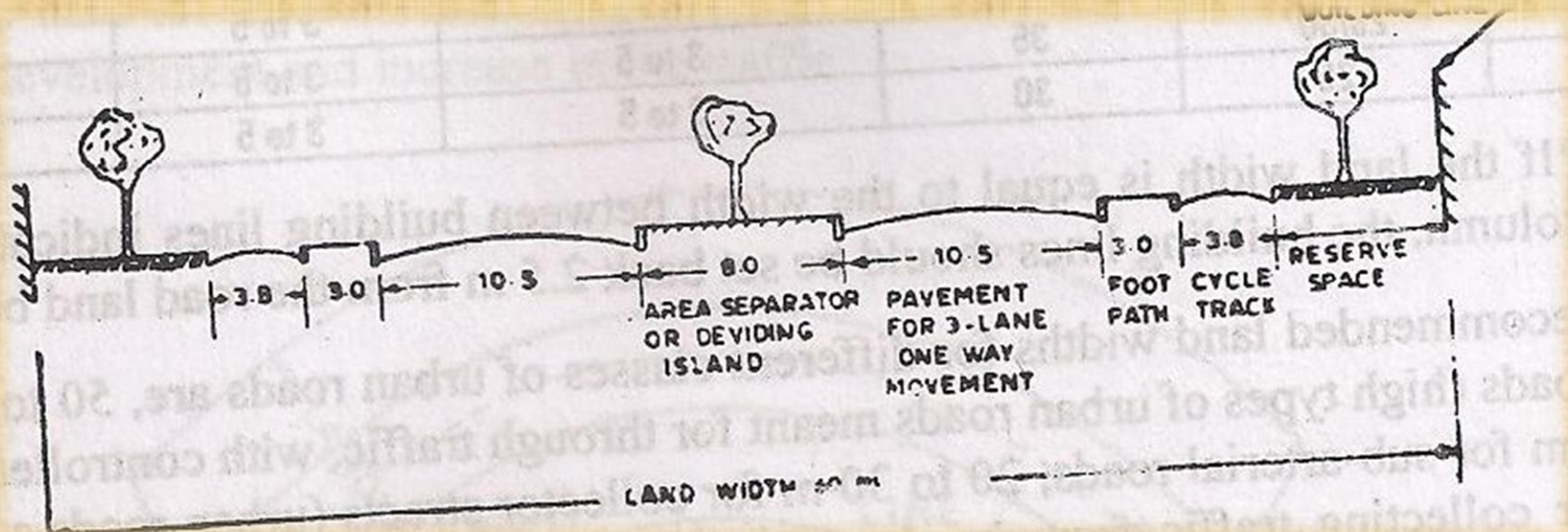


Cross Section of Major District Road in Cutting in Rural Area





Cross Section of Two Lane road in built-up area



Cross Section of Divided Highway in Urban area



Bump Integrator



Bump Integrator

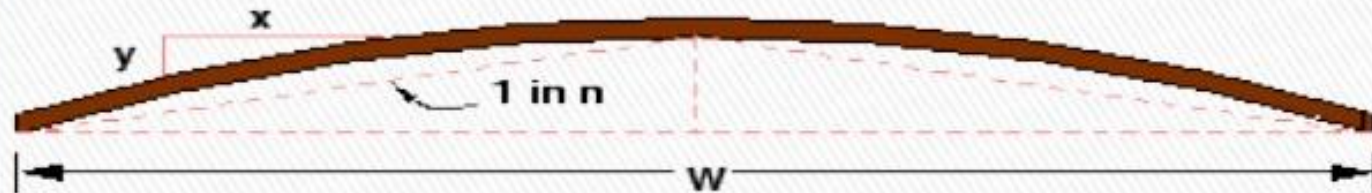


Bump Integrator

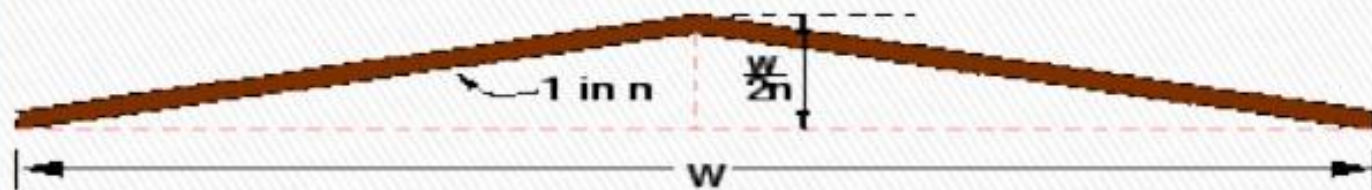


Bump Integrator

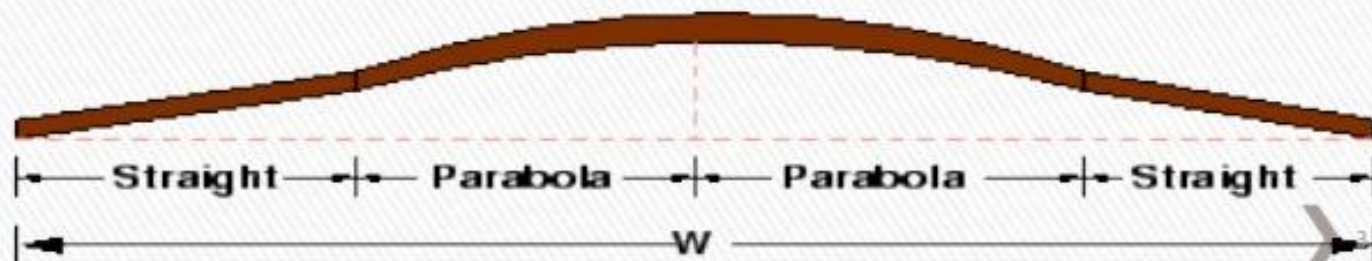
Types of Camber



a. Parabolic camber $y = \frac{2x^2}{nw}$



b. Straight line camber



c. Combination of straight and parabolic camber

By Kushal Patel

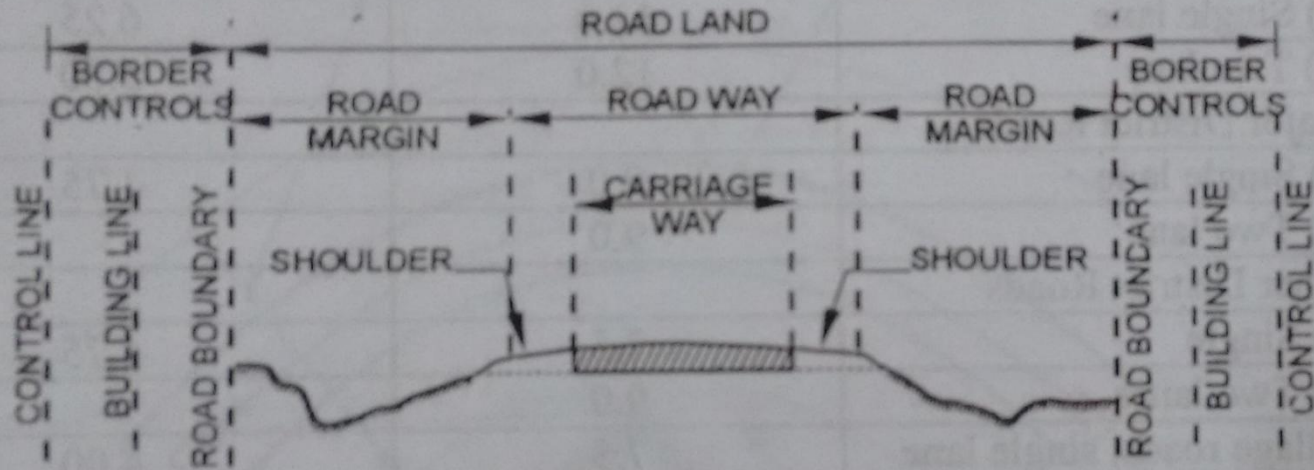
Camber C/S Section



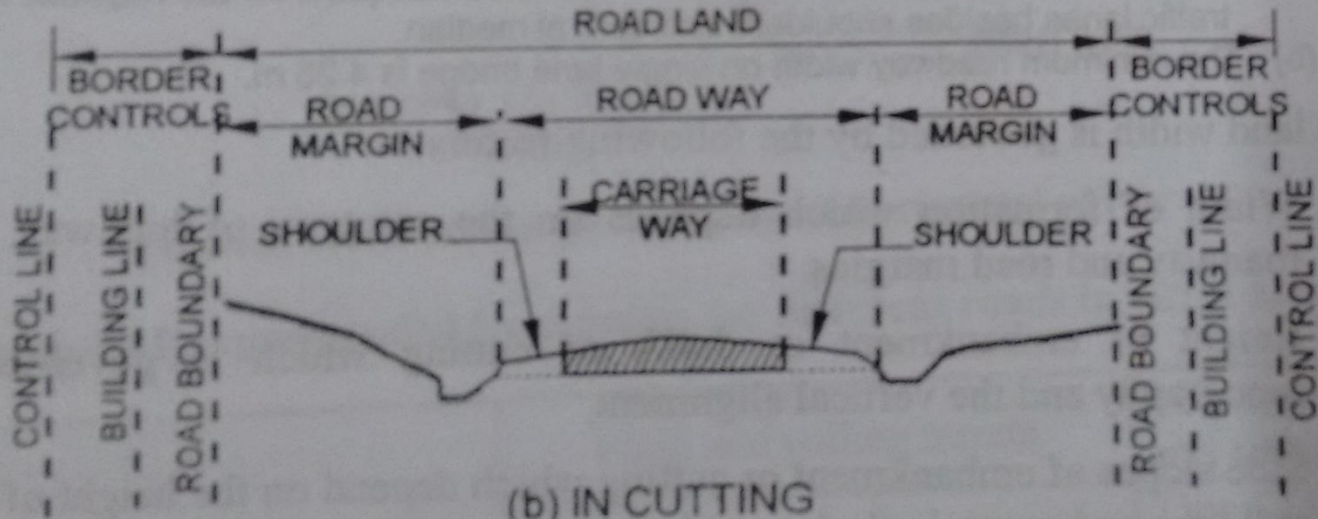


Road Layout

Road Cross Sections



(a) IN EMBANKMENT



(b) IN CUTTING



Lay Bay



Bus Bay

Kerb:







CROSS SECTION



Source: New York Department of Transportation

THE NEW YORK TIMES

Cycle track and Footpath



Guard Rails



Embankment and Underpass



Yamuna Express Way , connected with Noida-Agra.

