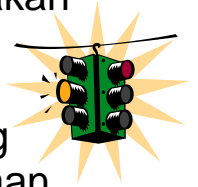




Menurut Banks (2002) pada prinsipnya ada tiga cara untuk memecahkan konflik pergerakan lalu lintas pada suatu persimpangan.



1. melalui solusi **Time-sharing** yang melibatkan pengaturan penggunaan badan jalan untuk masing-masing arah pergerakan lalu lintas pada setiap periode waktu tertentu, contoh dari solusi tersebut adalah persimpangan berlampu lalu lintas (*signalized intersection*).

2. melalui solusi **Space-sharing** yang merubah konflik pergerakan bersilangan (*crossing*) menjadi jalinan (*weaving*), contoh dari solusi tersebut adalah bundaran lalu lintas (*roundabout*).



3. melalui solusi **Grade separation** yang meniadakan konflik pergerakan bersilangan dengan menempatkan arus lalu lintas pada elevasi yang berbeda pada titik konflik, contoh dari solusi tersebut adalah persimpangan tidak sebidang (*interchange*).



## Definition

A grade-separated intersection is formed when the roadways that meet at the intersection are separated in the vertical plane to eliminate crossing conflicts.

If one road is carried over or under another by means of bridge, but without connections between them, the facility is called a **Grade Separation**

## Grade Separation

If one road is carried over or under another by means of bridge, but without connections between them, the facility is called a **Grade Separation**



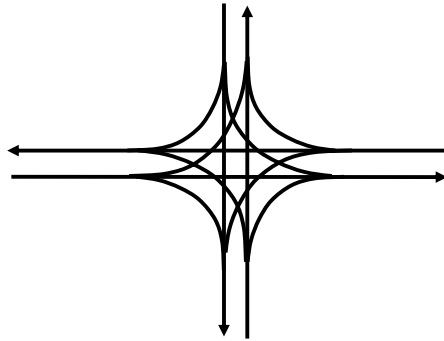
## Interchange

If connecting roadways to permit turning movements in one or more quadrants are provided, it is called an **Interchange**



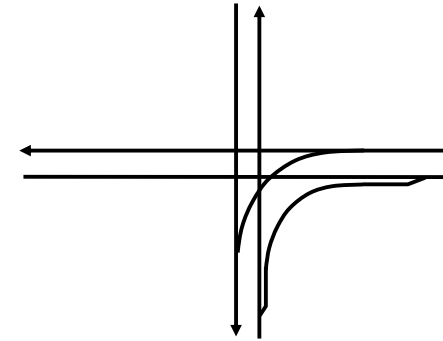
An **interchange** is a grade separation with connectors (ramps) to **facilitate turning movements**.

An interchange **eliminates collisions** at crossing points in the main through lanes.



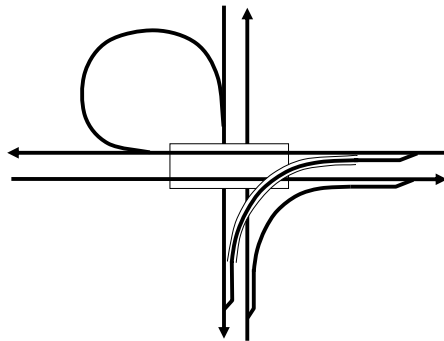
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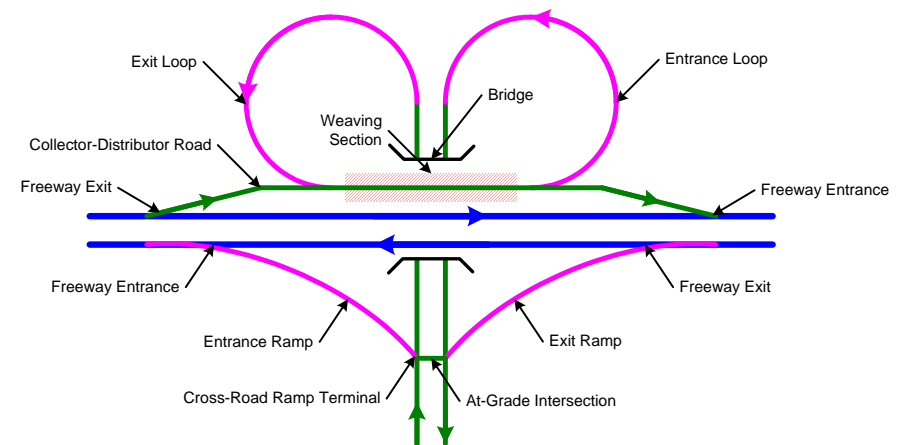


An **interchange** is a grade separation with connectors (ramps) to **facilitate turning movements**.

An interchange **eliminates collisions** at crossing points in the main through lanes.



### Komponen Interchange (Underwood, 1991)



# Pola Dasar Geometri Ramp

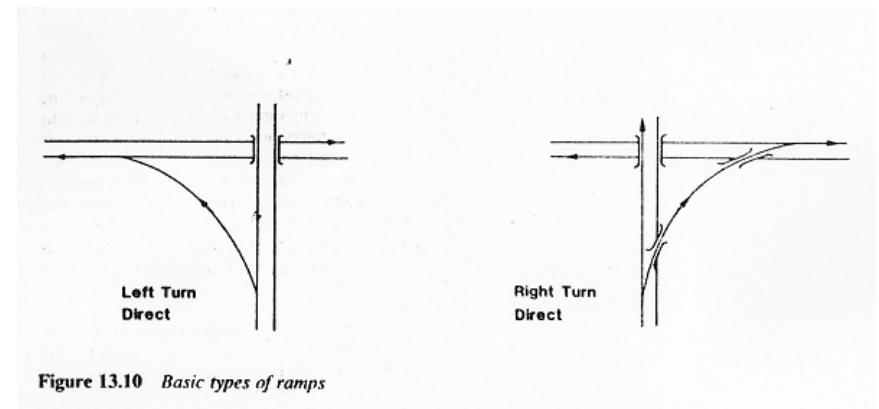
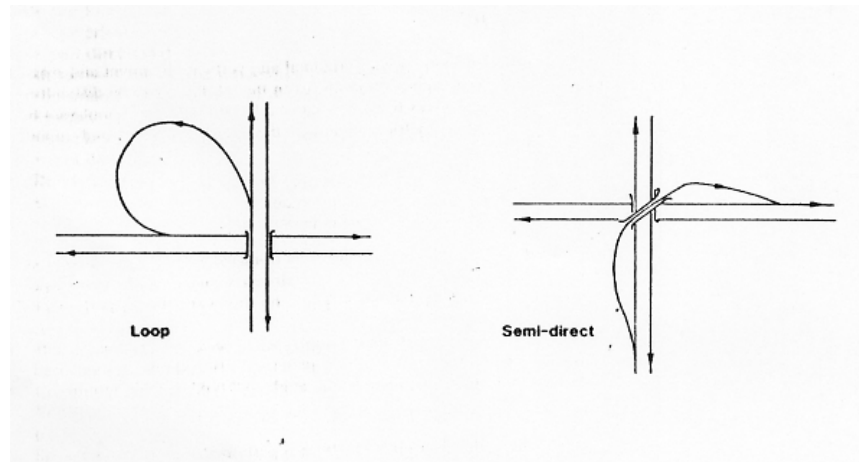
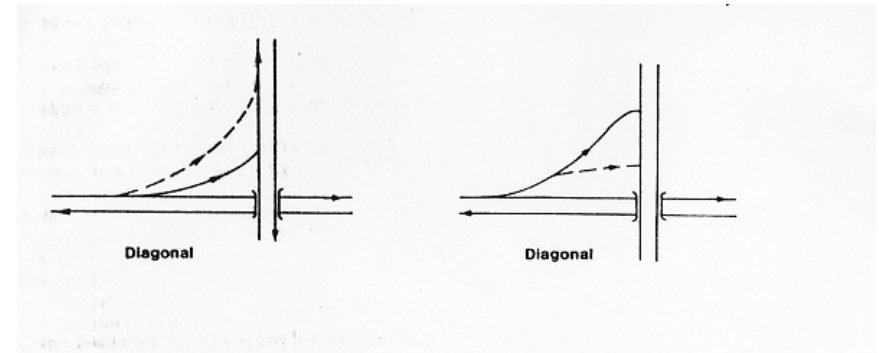
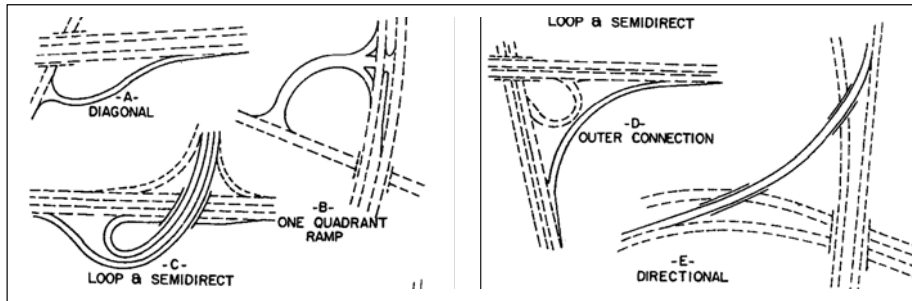
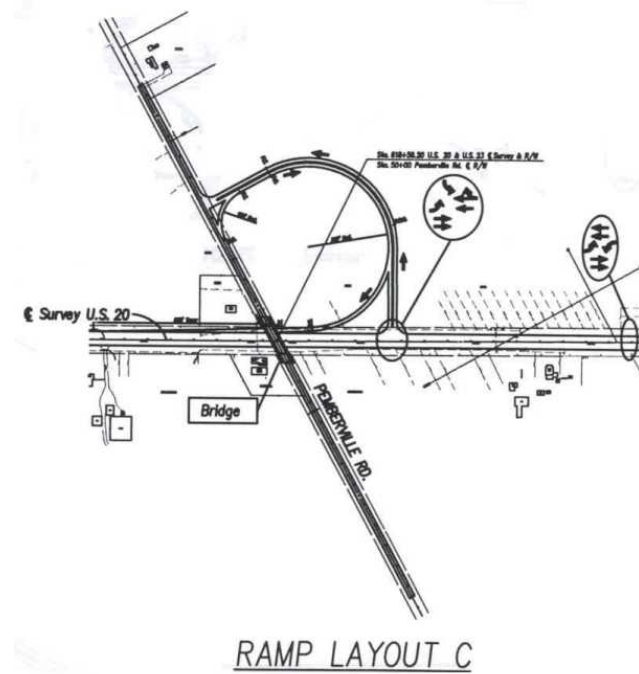
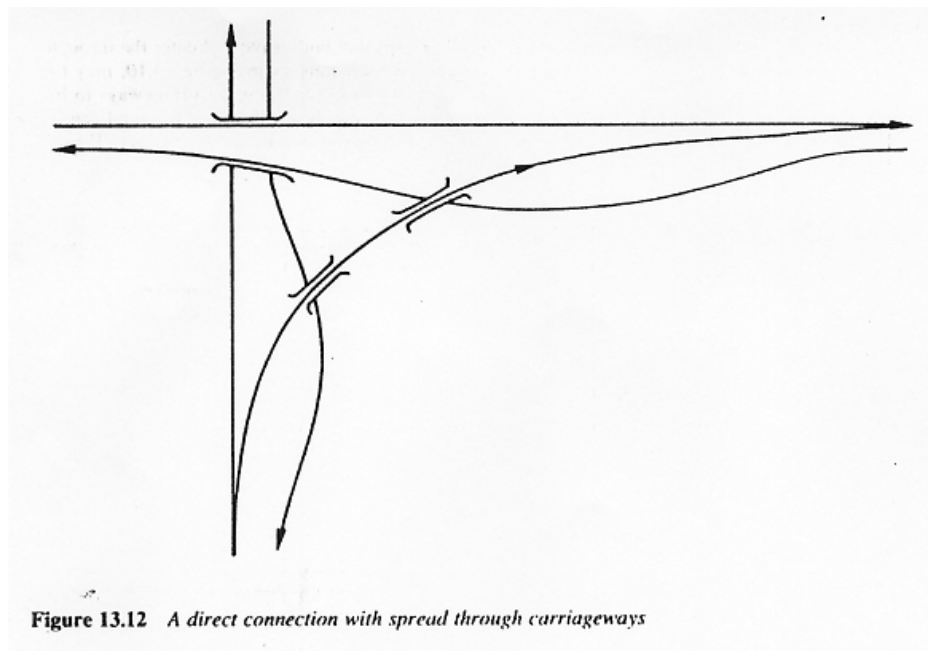
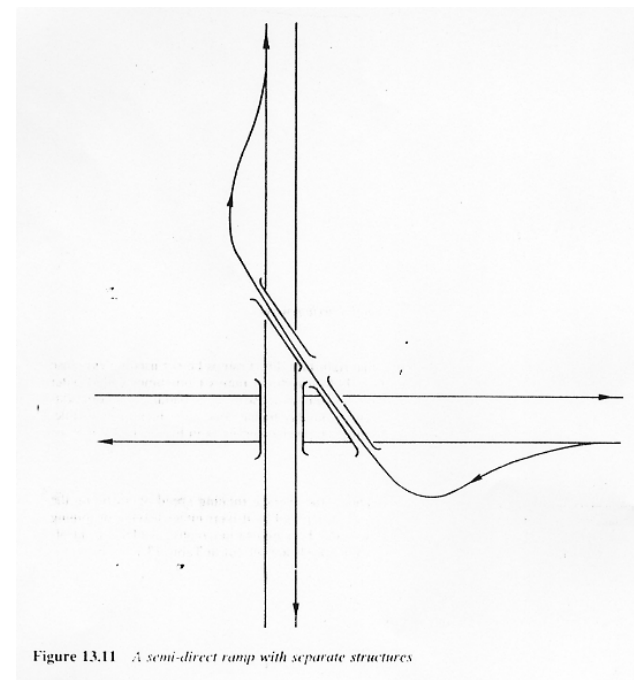
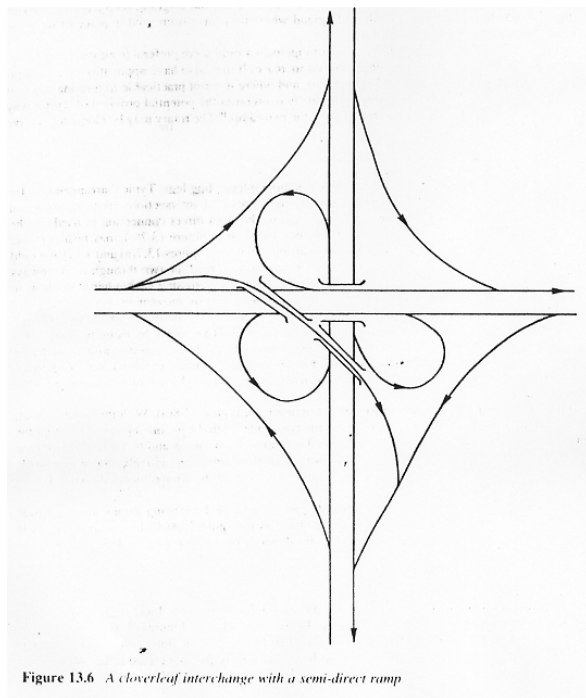


Figure 13.10 Basic types of ramps





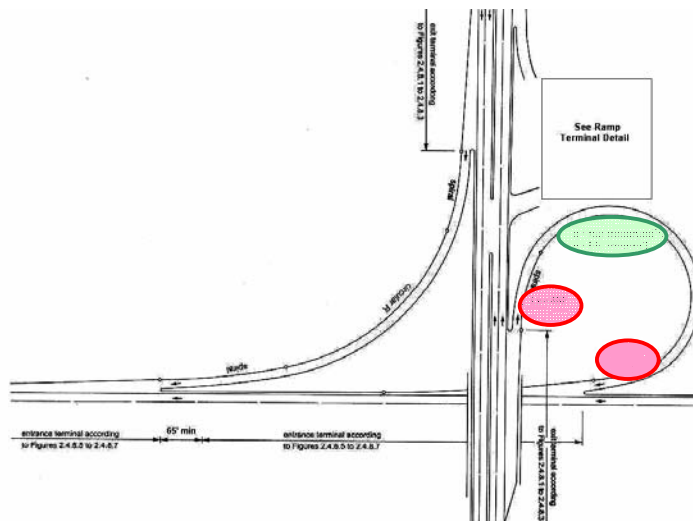
## Desain Geometri Loop Ramp

- Simple Curve Radius with Spiral (Spiral-Circle-Spiral)
- Simple Curve Radius with Tangent (Tangent-Circle-Tangent)
- Compound Curve Radius (Sharp-Flat-Sharp or Flat-Sharp-Flat)

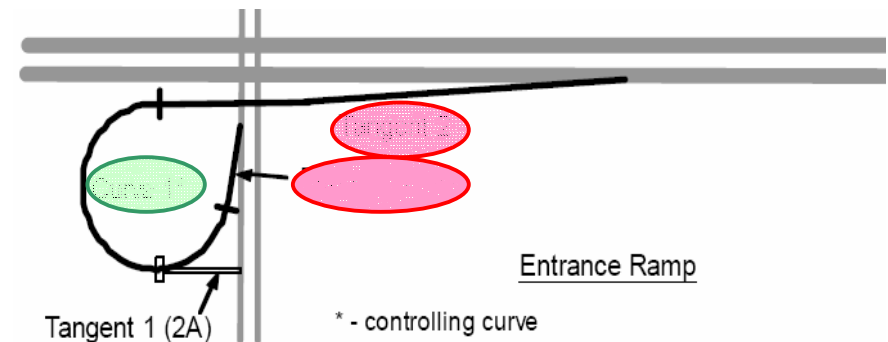
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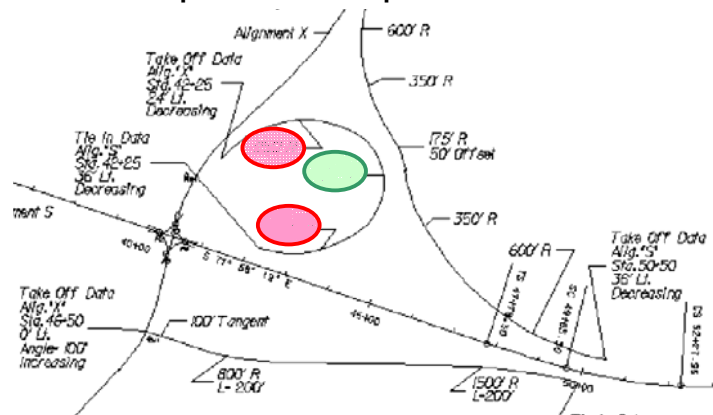
### Geometri Loop Ramp Spiral-Circle-Spiral



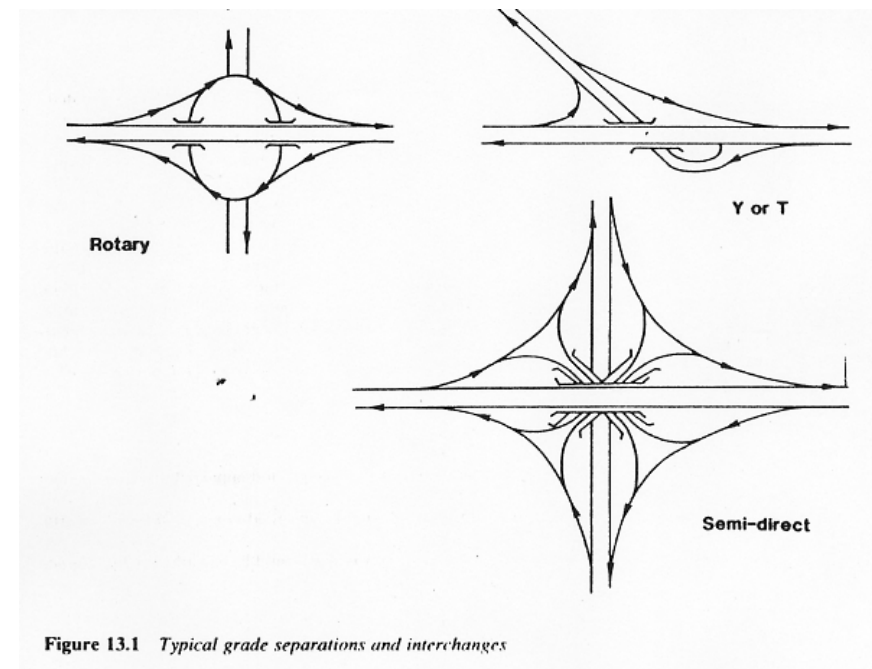
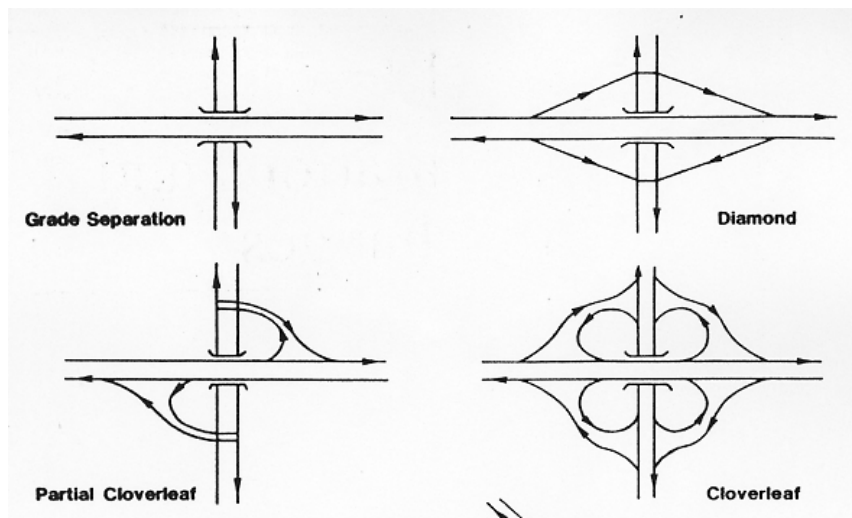
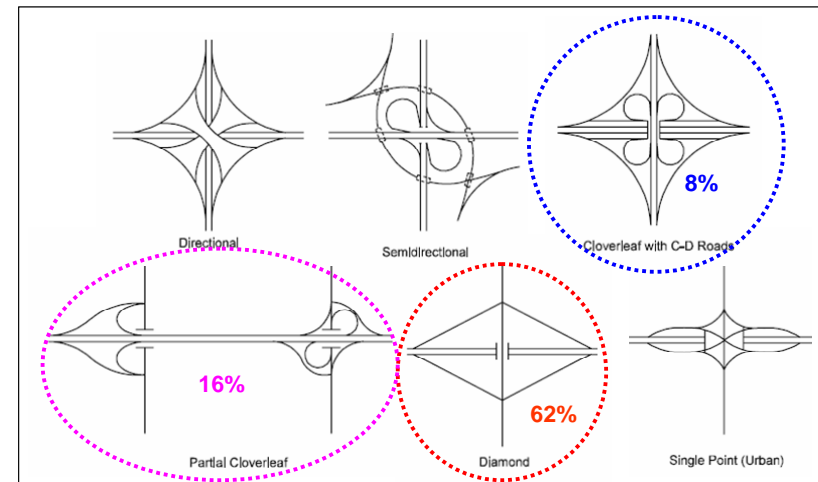
### Geometri Loop Ramp Simple Curve Radii With Tangent



## Flat-Sharp-Flat Compound Curve Radii

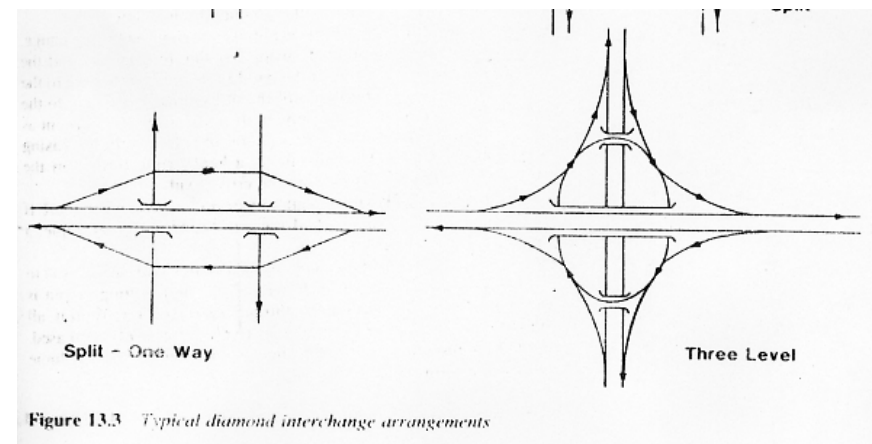
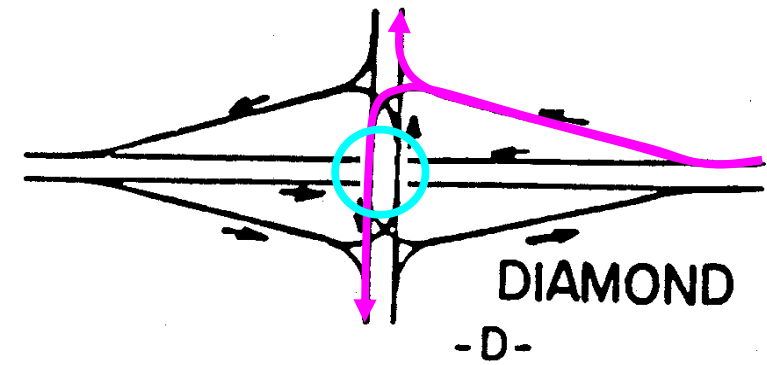
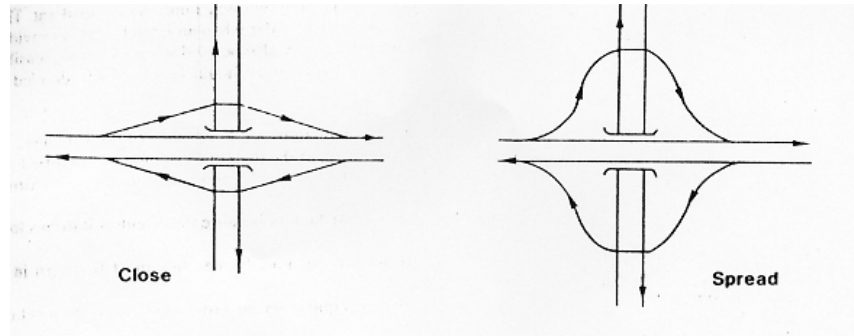


## Enam Pola Dasar Geometri Interchange

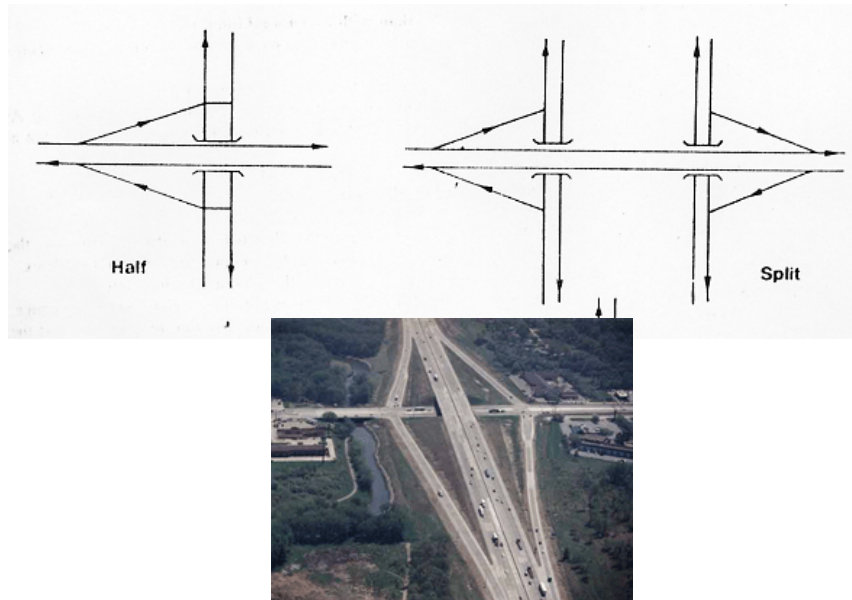


**Figure 13.1** Typical grade separations and interchanges

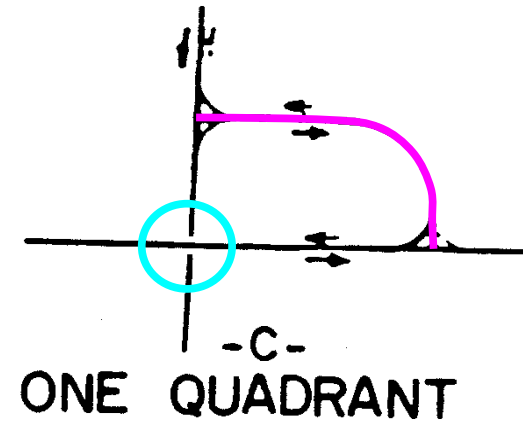
# Types of Interchanges



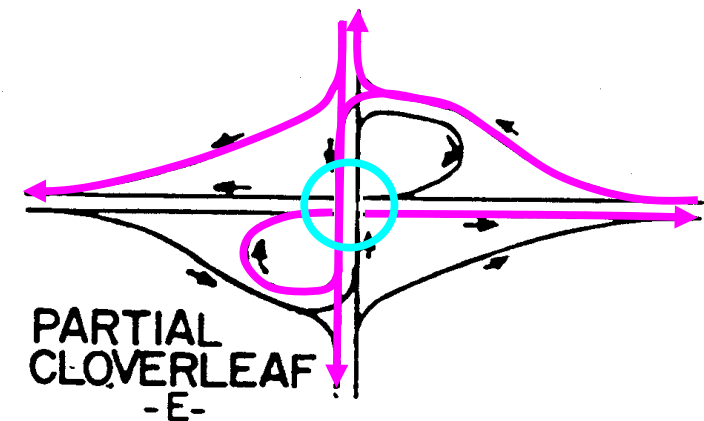




## Types of Interchanges



## Types of Interchanges



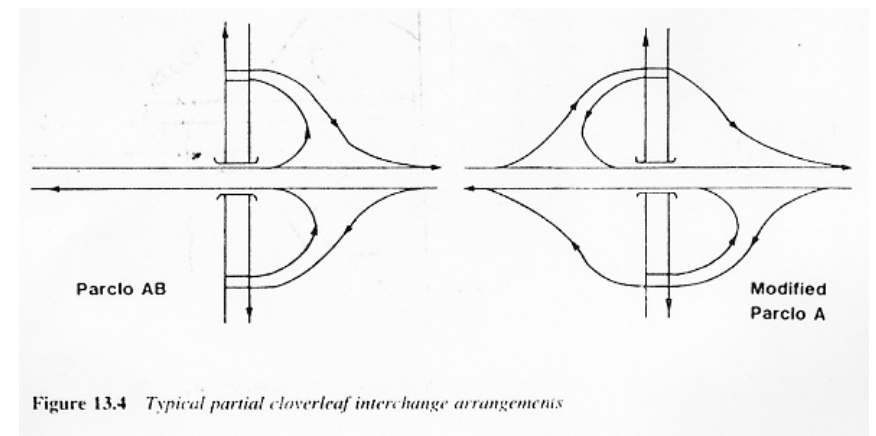
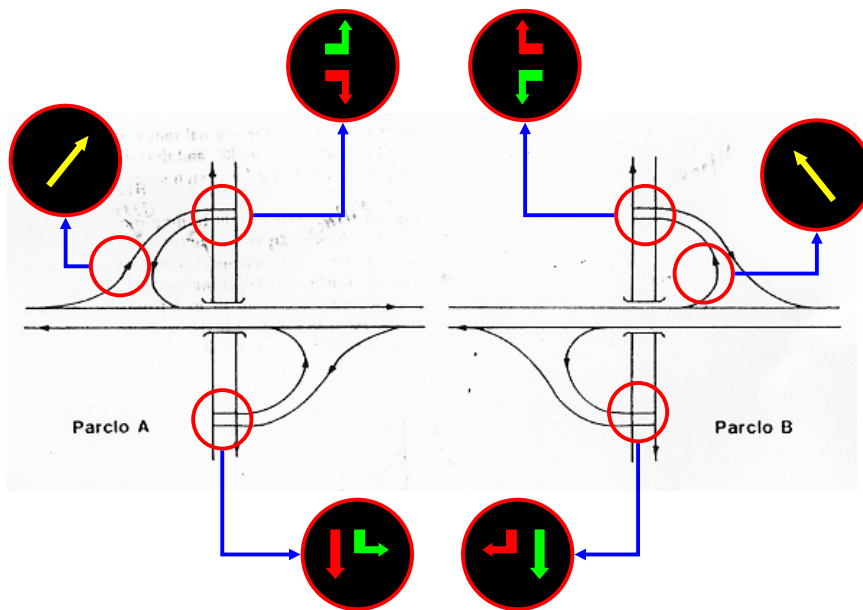
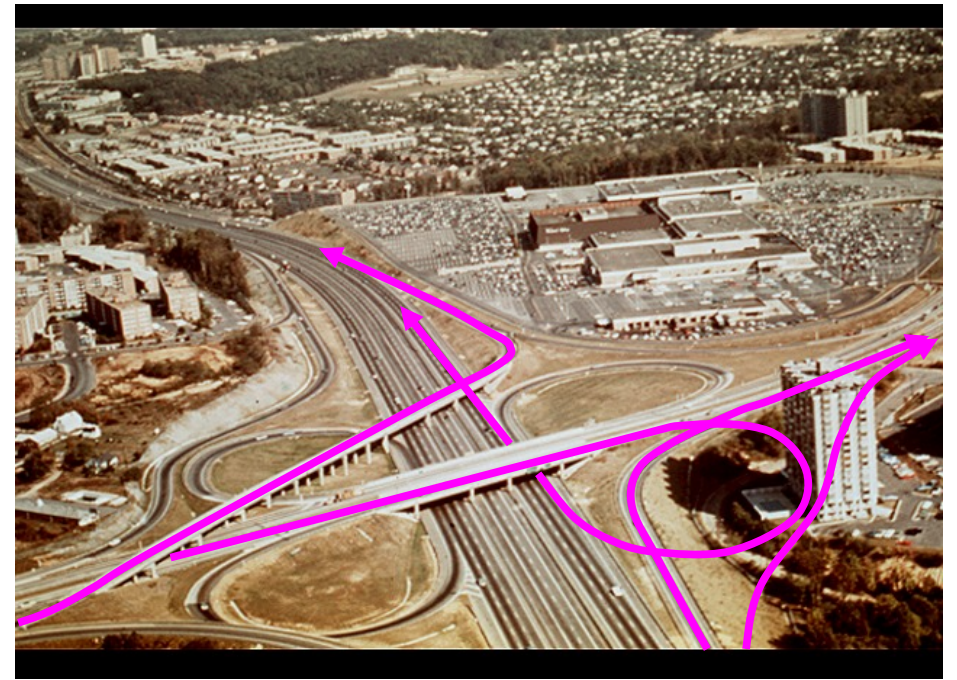
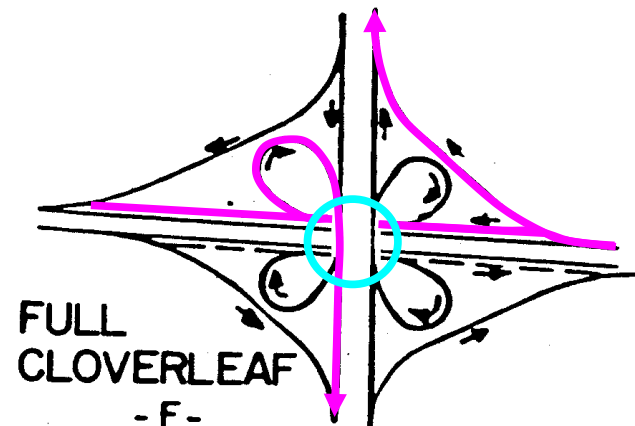


Figure 13.4 Typical partial cloverleaf interchange arrangements





## Types of Interchanges





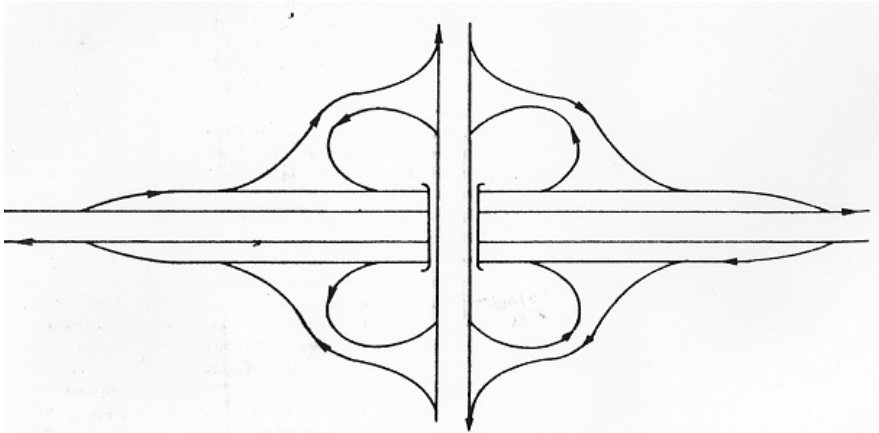
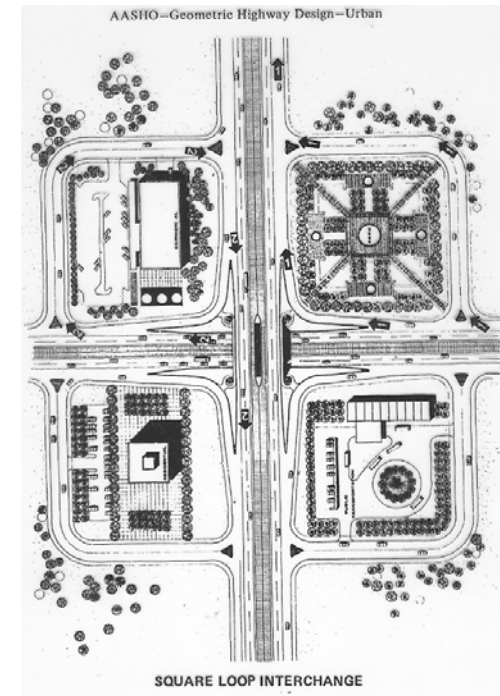
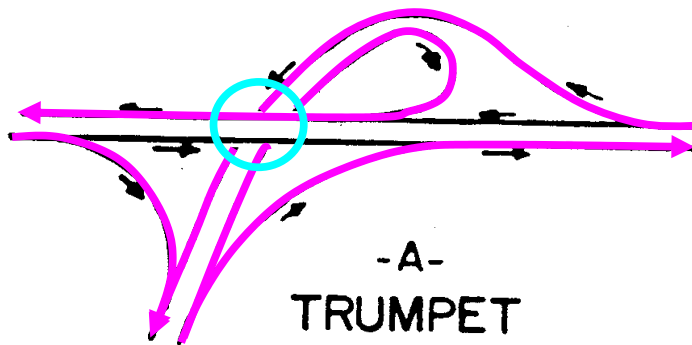


Figure 13.5 A cloverleaf interchange with collector-distributor roads adjacent to the through carriageways



SQUARE LOOP INTERCHANGE

## Types of Interchanges



-A-  
TRUMPET

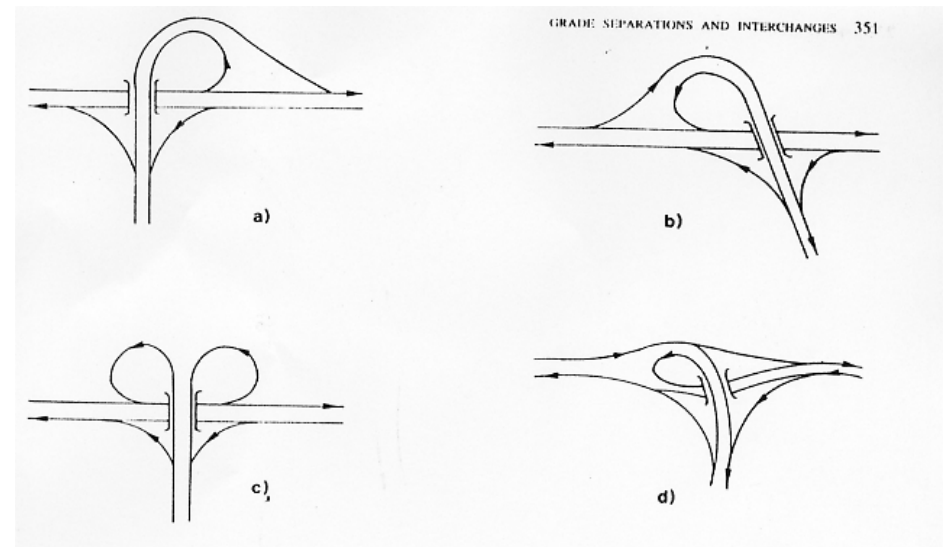
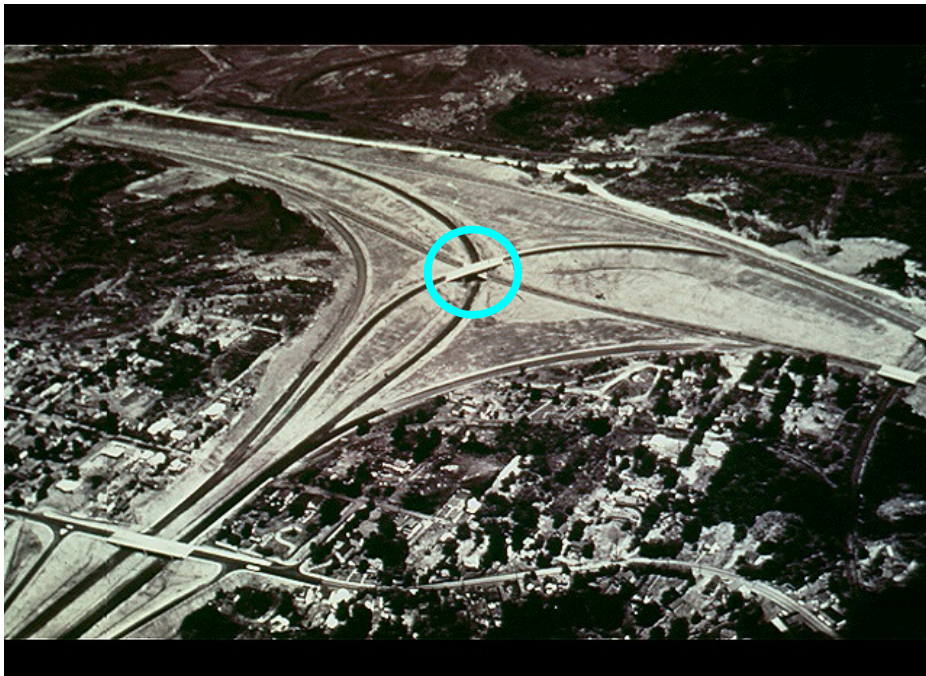
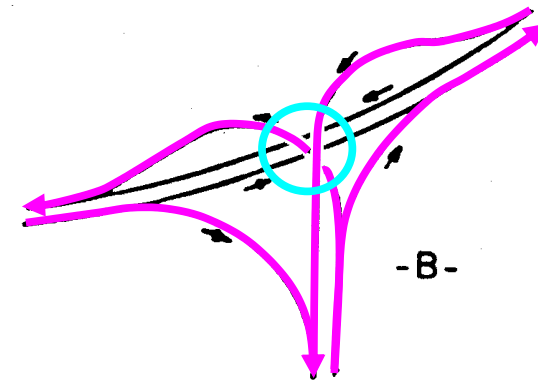


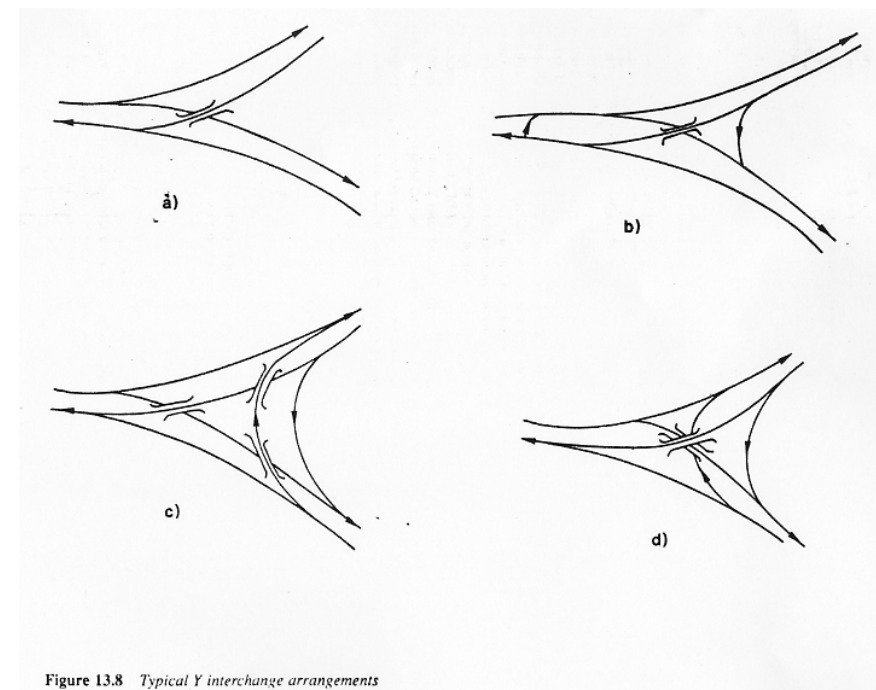
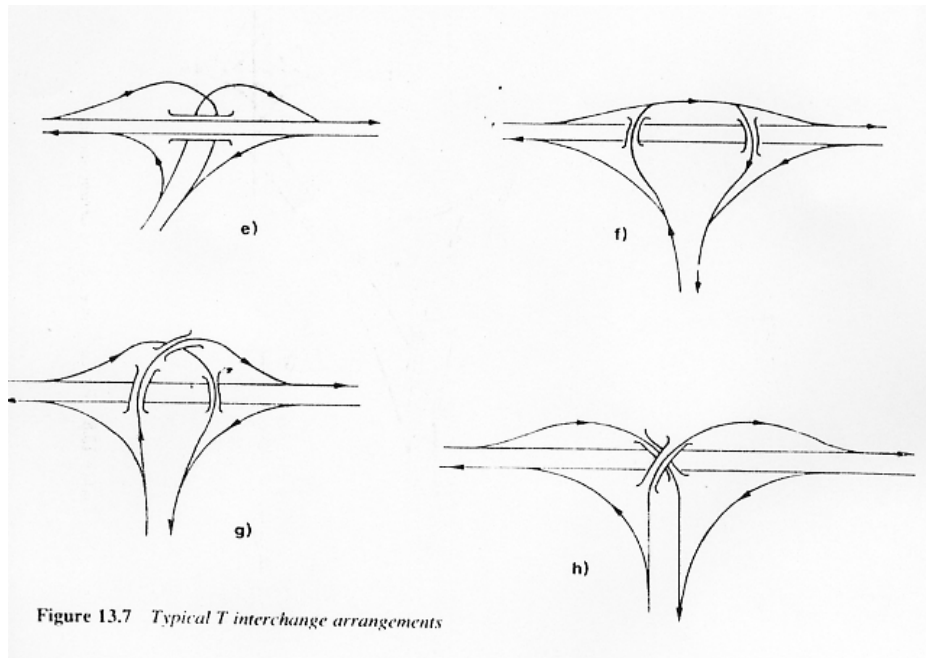




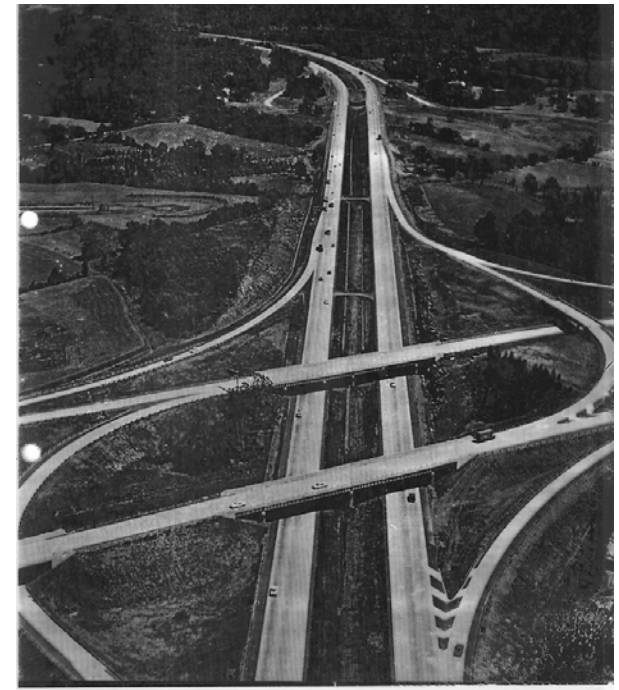
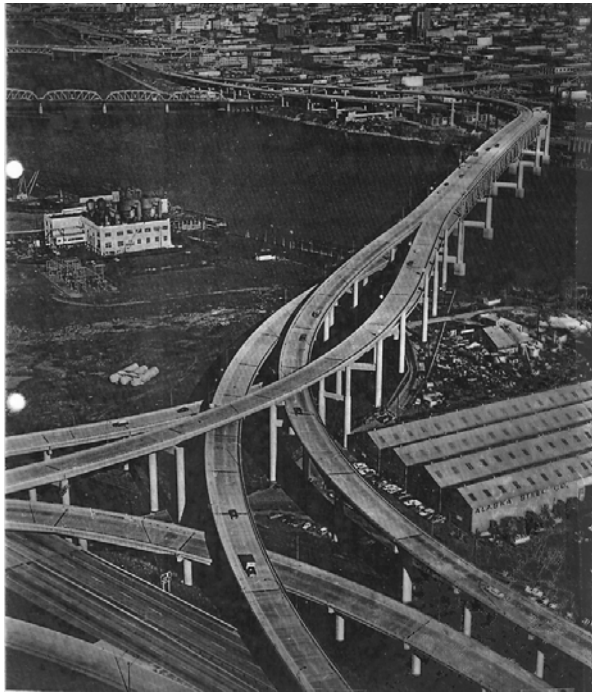
# Types of Interchanges

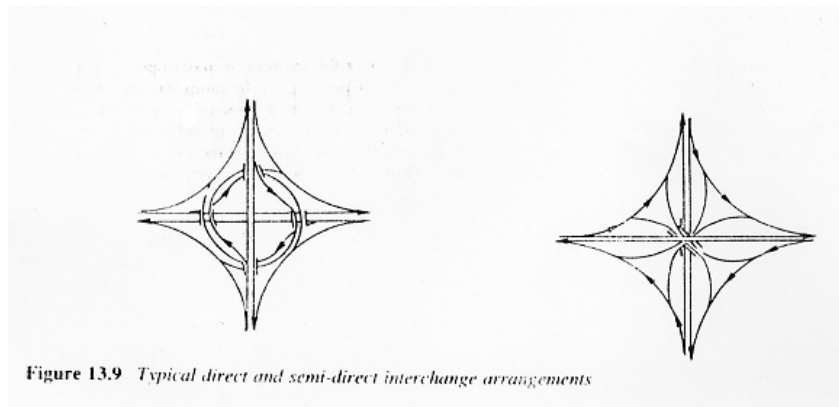
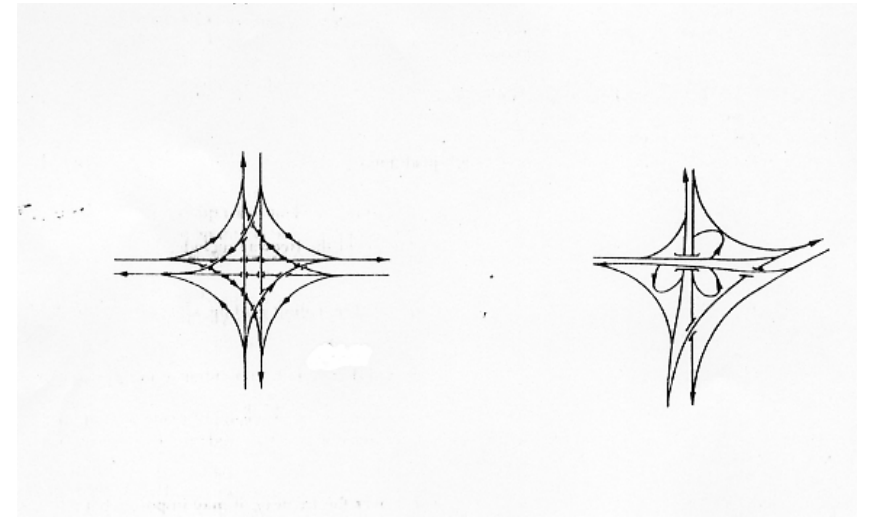
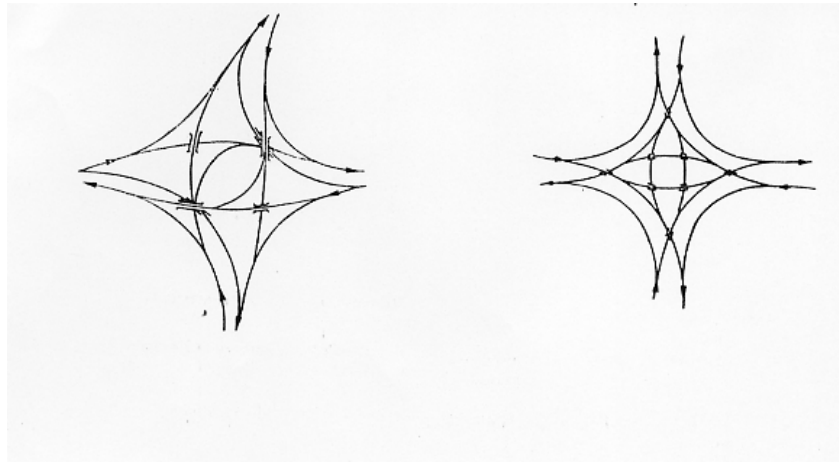
THREE LEG  
DIRECTIONAL











**Figure 13.9** Typical direct and semi-direct interchange arrangements





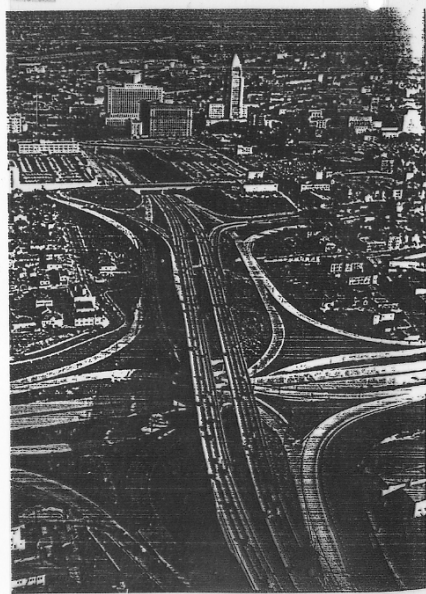


Fig. 8-16. A four-level traffic interchange for highest traffic demands. (Courtesy California Division of Highways.)

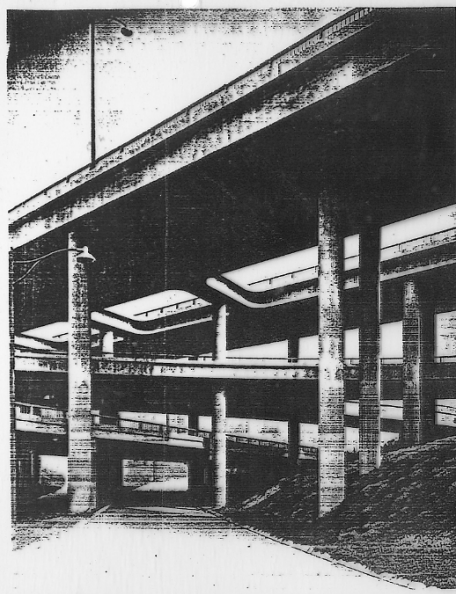
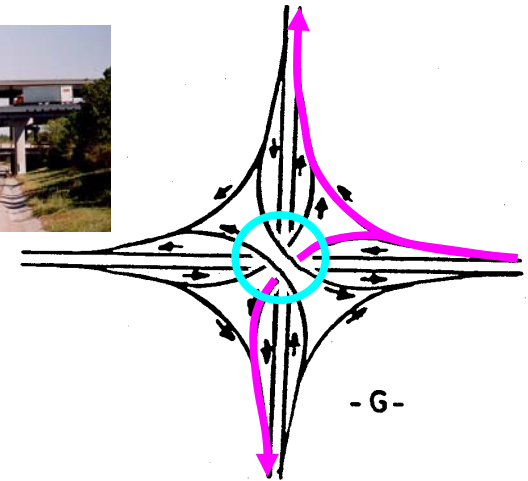
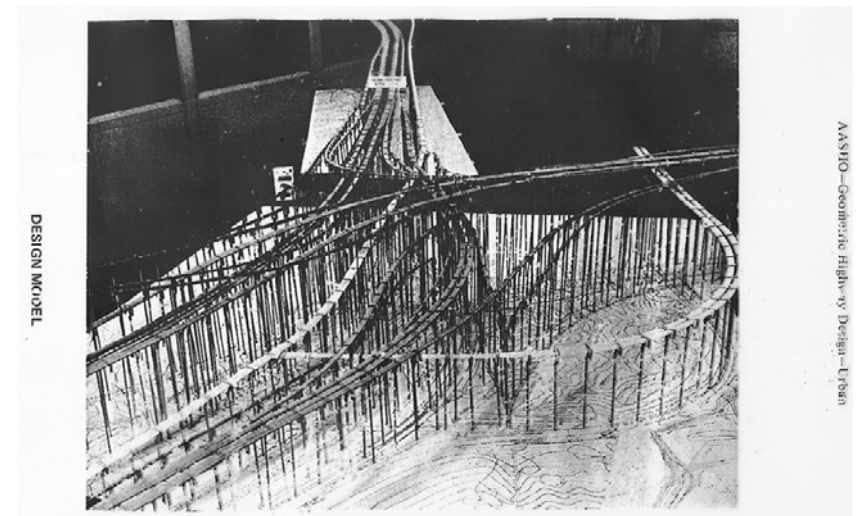


Fig. 8-17. A close-up of the four-level structure shown in Fig. 8-16. (Courtesy California Division of Highways.)

## Types of Interchanges

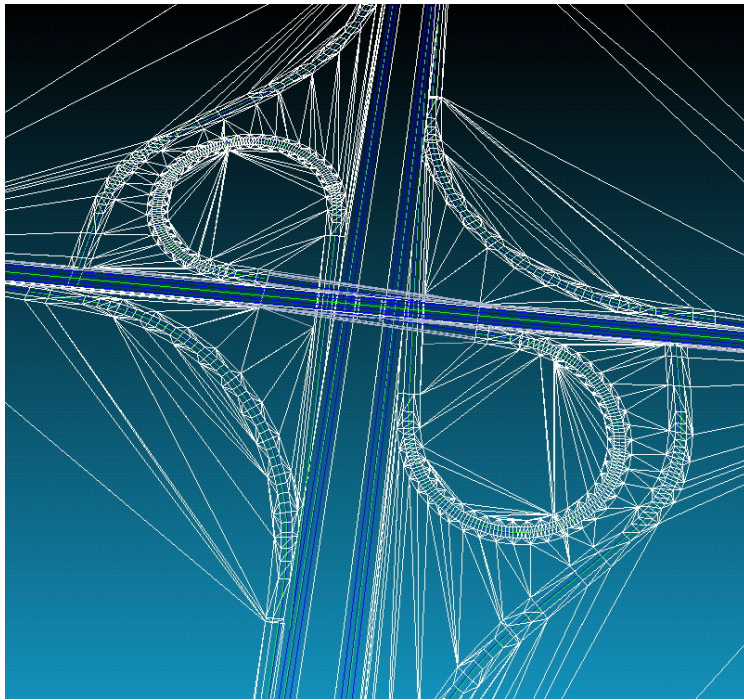


ALL DIRECTIONAL  
FOUR LEG



AASHTO - Geometric Highway Design - Urban





# On-Ramp & Off-Ramp Ngagel Waru (Aloha) – Tanjung Perak Tollway

