

**EAL 431 HIGHWAY DESIGN (SEMESTER I [SESSION 2021/2022])**

**ASSIGNMENT 2**

**Question 1**

- [a] As a junior traffic engineer, you are assigned to evaluate a road section located at an industrial area that consists of a factory and shop lots (Figure 1). The rough sketch was prepared by your senior engineer during your first visit to site. Rush hour traffic and cars at this busy road junction requires a proper at-grade junction design elements for safety purposes.

Based on your understanding, considering this incomplete sketch, explain TWO conditions that could lead to severe traffic accidents within the industrial area. [7 Marks]

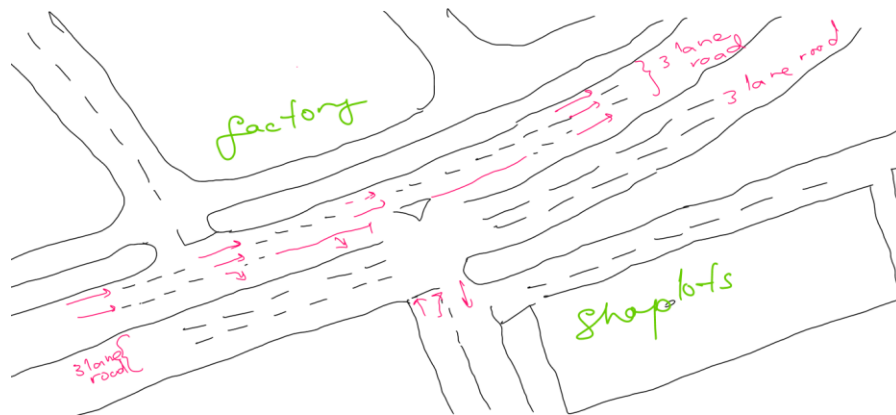


Figure 1. A sketch of an at-grade intersection at an industrial area for reconnaissance process

- [b] You are required to inspect the sketch and propose an improved plan view of the road section. The drawing/sketch can be CAD or hand drawn. No specific scale is required. [18 Marks]

The plan view must include the following design elements:

- Main traffic lanes
- Medians
- Traffic islands
- Signalized control
- Stop control (if any)
- Turning lanes

- Refuge lanes for turning
- Acceleration and deceleration lanes
- Yellow no parking line at main junction area

## Question 2

- [a] A toll expressway meets with a JKR state road as schematically shown in Figure 2. To satisfy the full access control criteria, a trumpet interchange will be designed. Sketch the appropriate interchange configuration by showing all components in the interchange including speed change lanes. Justify the location of the trumpet. Dimensions of design elements are not necessary. **[8 Marks]**

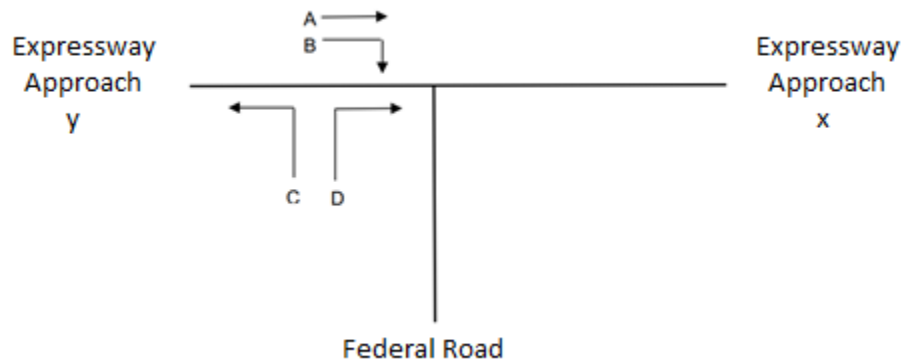


Figure 2

- [b] From a road safety audit on a collector road with a problem of speeding, it was suggested that a road hump should be built on the section of the road in order to reduce speeds. Specify and discuss THREE pros and cons of speed hump on a collector road. **[12 Marks]**
- [c] The goal of the Road Safety Audit process is to ensure that all road projects and existing roads are capable of providing the highest possible standard for all road users. It is aimed to identify the potential safety hazards. Thus, appropriate treatment could be taken to mitigate their adverse effects at minimum cost. The safety requirements of all road users should be explicitly considered at different stages of a project. Based on your understanding, explain the Road Safety Audit to be carried out on: **[15 Marks]**
- A new project
  - An existing road