Project Instruction

BFS 4033

Prestressed Concrete Design

1. This project is to be carried out in a group of maximum **FIVE (5)** students.

2. This project will contribute 20 % to the total mark.

3. Based on the following statement:

   *"You just appointed by consulting firm in your country as a Bridge Engineer. You are responsible to design a single span Prestressed bridge as in **Appendix 1** and must be complete within a short period for submitting to the client. Design a single span prestressed bridge as follows ."*

   a)   *Loading Analysis (Grillage Analysis)-*

   b)   *Design Prestressed Beam with your consideration:*
   - a)   *Sizing (Hume Product)*
   - b)   *Check Losess*
   - c)   *End Block Design*
   - d)   *Deflection*

Design Should be in Microsoft Excels Application.

i. Propose a suitable layout for the beam Bridge.

ii. Based on (i), propose the structural layouts. Some upper floor beams to be prestressed.

iii. Analyse and design the prestressed concrete beams.

iv. Provide the detailing for the prestressed concrete beams.

Remark: Computer software such as Staad Pro, Esteem and LUSAS can be used for the analysis.

4. The project has to compiled and submitted on week 14 – 15.

5. The project will be assessed based on the following criteria:

CLO 1 (5%)

- Analysis & design of PSB

CLO 2 (7.5%)

- Layout planning

- Analysis using software

- Creativity & innovative

CLO 3 (7.5%)

- Report

- Detailing

- Team working

Task 1: Conceptual Planning

- What is the minimum floor area for the building?
- What is the minimum land area for the building?
- What are the facilities/infrastructures to be provided?

Remark: Based on the above questions,

- Estimate the minimum built out area of the building.
- Estimate the minimum land area for the project.
- Sketch the floor plans.