

- To be able to understand the civil engineering project.
- To be able to develop skill for preparation of different features of civil engineering project.
- To be able to gather experience of preparation of project report on building, foundation and sub- soil investigation.
- To be able to develop skill for interpretation of test result, Steel truss, highway/railway /Flyover/Overpass/underpass/Interchange/Intersection/irrigation and environmental impact analysis.

### SHORT DESCRIPTION

Study and report on in respect of multi-storied building; Foundation design; Steel Truss; Highway project; Railway project; Flyover; Overpass; Underpass; Interchange; Intersection; Irrigation canal; Drainage canal; Water supply and sanitation project; Initial Environmental examination (IEE) of a project or any other similar project work as decided by the Head of the Department (HOD) and concern guide teachers.

### DETAIL DESCRIPTION

#### Practical

#### 1. Project on a multi-storied building.

- 1.1 Select a line plan of a multi-storied (residential or commercial) building.
- 1.2 Draw the site plan and layout plan of the building.
- 1.3 Draw the plan, elevation and sections of the building.
- 1.4 Design different parts and members of the building.
- 1.5 Prepare the detailed structural drawing of the building.
- 1.6 Estimate the quantities of different items of civil work of a building including water supply & sanitary works and internal electrification works.
- 1.7 Prepare a schedule of quantities with specifications and the estimate of building.
- 1.8 Prepare an abstract of cost from the estimate.
- 1.9 Prepare and submit a final report for the project.

#### 2. Project on design of foundation of a building.

Select a 6-storied residential building the foundation of which is to be designed.

Perform a reconnaissance survey at the proposed building site.

- 2.1 Collect soil samples from the building site.
- 2.2 Perform different tests for the soil samples.
- 2.3 Summarize the test results.
- 2.4 Interpret the test results.
- 2.5 Select two alternatives of foundation for the building.
- 2.6 Design the alternative foundations for the building.
- 2.7 Estimate the foundation cost for two alternatives.
- 2.8 Compare and decide which foundation is better for the building.
- 2.9 Prepare and submit a final report for the project.

#### 3. Project on Steel Truss.

- 3.1 Select and draw a workshop/warehouse showing the position of trusses.
- 3.2 List and sketch different types of steel truss suitable for the said workshop/ warehouse.
- 3.3 Calculate the load to be carried by the trusses.
- 3.4 Determine the stress of different members of the trusses.
- 3.5 Design different members of the trusses.
- 3.6 Design gusset plates and rivet of the trusses.

- 4.7 Estimate the quantity of materials required for the trusses and 2 coats of painting over a coat of priming.
  - 4.8 Prepare a schedule of quantities with specifications of the items of works.
  - 4.9 Prepare an abstract of cost from the estimate of the trusses.
  - 4.10 Prepare and submit a final report for the project.
- 4. Project on water supply and sanitary works.**
- 4.1 Select a suitable site for the project (may be institute campus).
  - 4.2 Draw the site plan of the project area showing different buildings.
  - 4.3 Calculate the water demand and quantity of sanitary disposal from the site.
  - 4.4 Calculate the capacity of underground / overhead reservoir and septic tank required.
  - 4.5 Sketch the water supply and sanitary network for the project.
  - 4.6 Estimate the quantities of different items of works for water supply and sanitary works.
  - 4.7 Prepare a schedule of quantities with specifications of the items of water supply and sanitary work.
  - 4.8 Prepare an abstract of cost from the estimate of the project.
  - 4.9 Prepare and submit a final report for the project.
- 5. Project on Highway/Railway/Flyover/Elevated Express Way/Metro Rail/Underpass/Overpass/ Interchange/Intersection/Irrigation canal/Drainage canal.**
- 5.1 Select the type and location of the project.
  - 5.2 Make reconnaissance survey and preliminary survey of the project.
  - 5.3 Plot the area of the project.
  - 5.4 Draw the detailed drawing of the project.
  - 5.5 Estimate the different items of works.
  - 5.6 Prepare and submit a final report for the project
- 6. Project on digital survey by using total station for specific area.**
- 6.1 Leveling the Total Station
  - 6.2 Tripod Setup and Mount Instrument on Tripod
  - 6.3 Focus on Survey Point
  - 6.4 Leveling the Instrument
  - 6.5 Electronically Verify Leveling
  - 6.6 Adjust Image & Reticle Focus
  - 6.7 Measuring the Height of an Object and Target Height
  - 6.8 REM Screen Results and Trouble-Shooting the REM Measurement
  - 6.9 Calibrating the Instrument, 3D Coordinates and Calibrate by back sight by Angle, back sight by Coordinate, Resection, Resection Notes and Coordinate Measurement
  - 6.10 Prepare and submit a final report for the project.
- 7. Project on Bio-gas.**
- 7.1 Select a suitable site for the project (May be a community or Institute campus).
  - 7.2 Make a reconnaissance and preliminary survey for the project.
  - 7.3 Draw the site plan of the project area showing different building.

- 7.4 Design a bio-gas plant for different capacity.
- 7.5 Draw the detailed drawing for the project work.
- 7.6 Estimate the different items of work.
- 7.7 Prepare a schedule of quantity with specification of the items of work of the project.
- 7.8 Prepare and submit a final report for the project.

**8. Project on Steel Structure.**

- 8.1 Select a line plan of a multi-storied (residential or commercial) building.
- 8.2 Draw the site plan and layout plan of the building.
- 8.3 Draw the plan, elevation and sections of the building.
- 8.4 Draw the detailed structural drawing of the building from given data.
- 8.5 Estimate the quantities of different items of civil work of a building including water supply & sanitary works and internal electrification works.
- 8.6 Prepare a schedule of quantities with specifications and the estimate building.
- 8.7 Prepare an abstract of cost from the estimate.
- 8.8 Prepare and submit a final report for the project

**9. Project on Initial environmental examination (IEE) of a hydro-electric; bridge; dam; irrigation; construction; water treatment plant; sewage treatment plant; chemical/fertilizer plant; shrimp; leather project etc.**

- 9.1 Select the type and location of a particular project.
- 9.2 Prepare a checklist with significant environment parameters.
- 9.3 Develop questionnaires to collect field data.
- 9.4 Complete initial environment examination (IEE) through checklist.
- 9.5 Prepare and submit a final report for the project

**Note: 1** Report on any one of the project is to be submitted by a group of students consisting of not more than 6. The Head of the Department or the concerned guide teacher(s) may decide for similar project other than those as stated above.

**Note: 2** The project is to be prepared covering the following components:

- 2.1 Project Title
- 2.2 Executing Agency
- 2.3 Objectives of the Project
- 2.4 Location of the Project
- 2.5 Project Implementation Period
- 2.6 Log frame
- 2.7 Procurement Plan
- 2.8 Year wise Financial and Physical Target Plan
- 2.9 Project management set-up
- 2.10 Cost Estimation of project