R.C.Patel College Of Engineering & Polytechnic, Shirpur

Department of Civil Engineering

Course Title- Construction Management **Course Code -** 313010

Programme Name -Civil Engineering **Semester-**Third

Unit	Title	COs	Learning hours	R Level	U Level	A Level	Total Marks
I	Project Initiation and its feasibility	CO1	06	0	0	0	0

UNIT 1 : Project Initiation and its feasibility

1.1 Project: A project which is one of the task which we have to complete in limited or given time. There is starting and finish timing. It is temporary work from which undertaken to create a unique product, service or result.

- In Civil Engineering, Projects includes construction Roads, bridges, buildings, dams etc.

Functions of Project Management:

Management
- Planning → First stage, deciding objectives, budget and schedule.
- Organising → Second step, Arranging orderly in all resources for managing properly.
- Staffing → Selecting right Candidate for right work,
- Directing → Managers guide, instruct and giving Proper way to perform work.
- Controlling → checking and correcting mistakes.
- Coordinating → It involves all will be bring together for assist work and final best output.
- Scheduling → It involves order by fixing the starting to finish time for each activity for execute work in orderly manner.

Ethics in Project Management:

Ethics means moral values and professional behaviour during project Work.

1) Honesty in Work
2) Safety of Workers
3) Quality construction
4) Environmental protection
5) Fair use of Resources
6) Avoiding Corruption and fraud.

Project Life cycle:

A project passes through different or Number of stages from starting to completion. as follows:

1) Project Initiation
   - Project idea identified, objectives and goals are decided.
2) Project Planning
   Arrangement Resources, manpower, Budget estimation, Time schedule preparation.
3) Project Execution
   Actual process of construction work, materials, labour, machines are used.
4) Project Monitoring and controlling
   - Progress of Work is checked regular way, cost, quality and time are controlled.
   - Problems are corrected.
5) Project closing:
   - final inspection of projectare done.
   - Documents are completed.
   - Hand over to project client.

1.2 Project characteristics and constraints:

Characteristics of Project:

1) Temporary in Nature: Fixed start & end date, it finishes after achieving goal.
2) Specific objective: Every project have to achieve particular target.
3) Unique Work: Each project is different from design, location, size and Requirements.
4) Use of Resources: Projects need manpower, money, materials and time for completion.
5) Teamwork: In each project teamwork required - work together for proper output.
6) Risk and uncertainty: Projects in some cases faces, like delays, accidents, cost increase or wheather issues.
7) Planned Activities: Proper planning & scheduling.

Project Constraints:

1) Scope: Total work and activities included in project.
2) Time: Project should be completed within given deadline.
3) The project cost must be completed within approved budget.
4) Quality: The Work requires standard and specifications. with good quality of materials.
5) Stakeholders: organizations connected with project and affected by it.

   Ex. client, local public, contractor etc.

1.3 Project Feasibility Analysis

- Feasibility analysis checks wheather project beneficial or practical before starting work.

1) Market Analysis :

It studies :- wheather demand for the project.
- Market conditions.
- Competitive analysis
- Future opportunities.

2) Financial Analysis :

It studies: - Cost Estimation
- Profit Analysis.
- Return on Investment.
- Revenue Projections.

3) Net Present Value (NPV) Method :

NPV compares present value of benefit and costs.

$$NPV = \Sigma \frac{\text{Cash Inflows}}{(1+r)n} - \text{Initial Investment}$$

+ve NPV → Project profitable
-ve NPV → project may not be suitable.

4) Payback Period Method :

Payback period means the time required to recover the initial investment.

$$\text{Payback Period} = \frac{\text{cost of the investment}}{\text{Annual net cash flow.}}$$

Steps in feasibility study:-

- feasibility simply an assessment of the practically of a propored plan or method.

1) Examine the business problem or opportunity.
   - from that understand the need of project.

2) Identify the Requirement.
   - from that determine materials, finance, labour, technology & land requirement.

3) Conduct feasibility study.
   - study technical, financial, legal and environmental aspects.

4) Define the criteria.
   - from that set standards for judging project success.

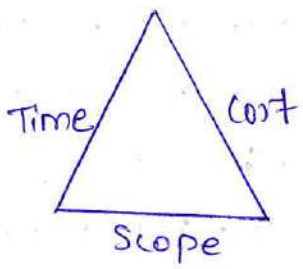
5) Give Ranking scores.
   scored based on feasibility.

6) Rank the feasibility Results.
   It is best way for selecting according to ranking.

7) Identify the feasibility outcome.
   Final decision, will be
   - Accept the project
   - Modify the project
   - Reject the project.

1.4 Project Management FrameWorks and Standards

- Projects are implemented through project management.
- Project Management is defined as applications of knowledge, tools, skills and techniques to activities of project for achieving the project objectives or Requirements.
  - Time
  - Cost
  - Scope



- Common FrameWorks:
  1. PMBOK structure [Project management Body of Knowledge]
  2. PRINCE2
  3. Agile Project Management.

- Benefits:
  1. Better planning
  2. Risk control

Project Management Consultant (PMC)

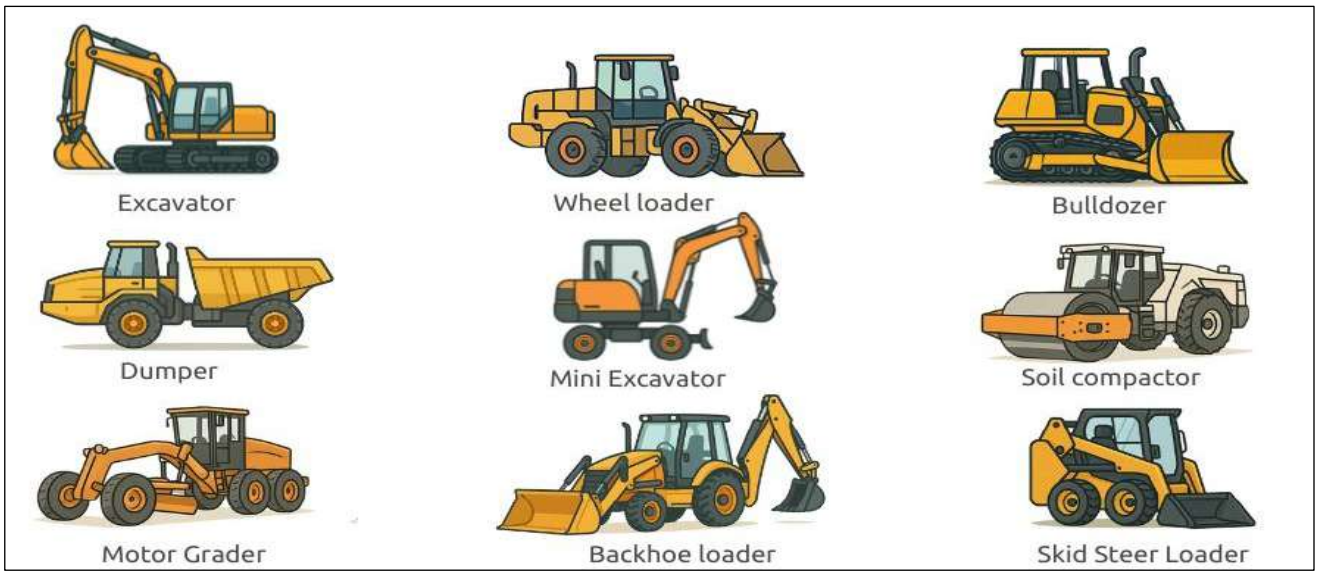
- A PMC is an expert organization or person appointed to manage & supervise the project.

Role and Responsibilities of PMC:

1. Planning and scheduling
2. Cost Estimation
3. Quality control
4. Safety supervision
5. Monitoring project progress
6. Coordinating between client and contractor.
7. Preparing reports and documentation.

Equipment used in executing the Civil Engineering

•Earth moving equipment



Equipment	Functions in Civil Engineering
Excavator	Digging soil, trench excavation, demolition work, lifting heavy materials, canal cleaning
Wheel Loader	Loading soil, sand, and gravel into trucks, moving construction materials, site cleaning
Bulldozer	Pushing soil and rocks, land clearing, ground leveling, road construction
Dumper	Transporting soil, sand, gravel, and construction debris from one place to another
Mini Excavator	Small excavation work, digging in narrow areas, pipeline work, landscaping
Soil Compactor	Compacting soil and asphalt, increasing soil strength, reducing air gaps in soil
Motor Grader	Leveling road surfaces, preparing road base, slope formation, finishing work
Backhoe Loader	Digging trenches, loading materials, small demolition work, maintenance work
Skid Steer Loader	Loading and unloading materials, site cleaning, small excavation work, working in small spaces

Hauling Equipment (Drum trucks, Front end loader, Conveyor belt)

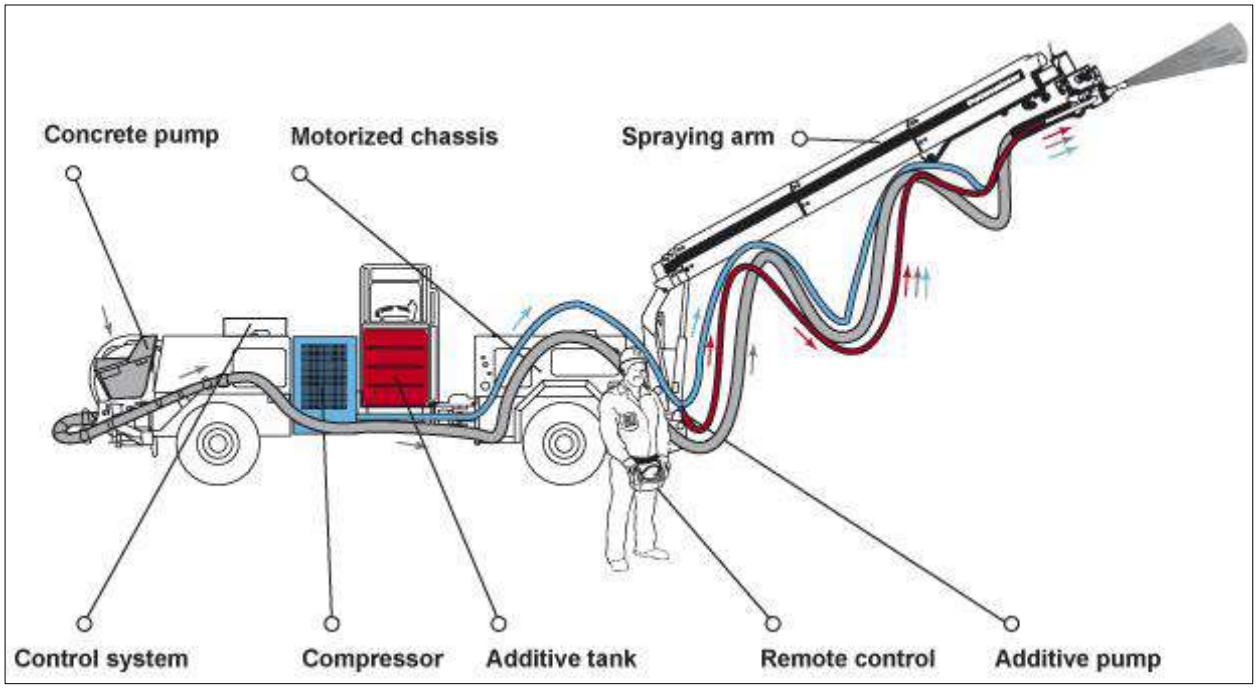
Front end loader

Drum trucks

Conveyor belt

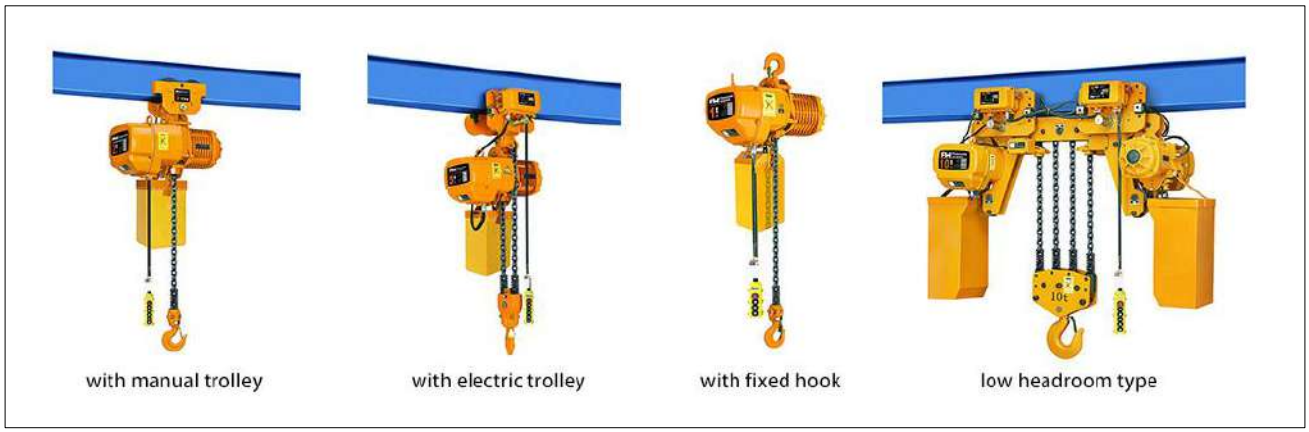
Hauling Equipment	Functions in Civil Engineering
Dump Trucks (Drum Trucks)	Transporting soil, sand, gravel, rocks, and construction materials from one place to another
Front End Loader	Loading loose materials like sand, gravel, and soil into trucks; site cleaning and material handling
Conveyor Belt	Continuous movement of materials such as cement, sand, gravel, and concrete over short or long distances

Concreting Equipment (RMC mixer, Concrete pump),



Equipment	Function
RMC Mixer	Transports and mixes ready-mix concrete to maintain uniformity during delivery.
Concrete Pump	Pumps concrete through pipelines to place it quickly at the required location.

Hoisting Equipment (Lifting & lowering equipments, Cranes).



Lifting & lowering equipments

Cranes

Hoisting Equipment	Function
Lifting & Lowering Equipment	Used to lift, lower, and move construction materials safely and efficiently.
Cranes	Used to lift and transport heavy materials vertically and horizontally on construction sites.