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GOOD Building

Structure Design and Construction

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CCT3113 Analysis and Building Structure
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It is not the beauty of the building you should look at: it's the **construction of the foundation** that will stand the test of time.



Introduction to ***Construction***

Construction comes from the word ‘construct,’ which means ‘***to build***.’

In terms of engineering, **construction** is the activity of putting together different elements, using a detailed design and plan, to create a structure for a certain location. When you construct structures, you need to have a clear plan of how you are going to do that. You also need to know the specific location. Architects and engineers design and build the structure with that location in mind.



Types of Construction

Almost all construction projects can be broadly categorized into one of three types of projects:

- ➔ Buildings and houses
- ➔ Public Works
- ➔ Industrial Type Structures

Within each of these types of construction, there are lots of sub-categories. For instance, buildings include both residential homes and commercial skyscrapers. Building projects may involve renovations on existing buildings or building from scratch. Public works involve roads, railways, water and waste water distribution and purification systems, dams, and bridges. Finally, industrial projects include refineries, pipelines, power utilities, manufacturing plants, and telecommunication infrastructure.

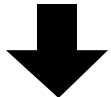


Phases of Construction Projects

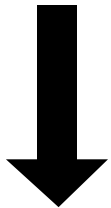
Conceptual Phase In this phase, the idea of what you want to build comes together



Design Phase involves a varied group of individuals, each with specific expertise, who put together specifications and blueprints for the project. The design team would also decide on the materials needed, project timeline, and material costs.



Construction Phase involves equipment, construction materials, and contractors. With larger sites, heavy machinery would be used. Common equipment on construction sites include hand-held tools (like shovels, hammers, and saws) and power tools (like drills, welding torches, and nail guns). Heavy machinery may include cranes, earth-moving equipment like bulldozers and excavators, cement mixers, as well as trucks and haulers to transport materials.



The materials needed are also a crucial aspect of construction and will depend on the type of project you're working on. Materials can range from sand, gravel, cement, wood, and steel to asphalt, pipes, concrete blocks, and more. The last piece of the puzzle is contractors. Contractors are go-to specialists who have the labor, equipment, materials, and expertise needed for a certain job. Examples might be a roofing contractor or a contractor who is specialized in heating and air conditioning systems.

Commissioning Phase mechanical and electrical equipment is tested before going into full operation



Operation and Maintenance Phase is the phase where you make sure your original concept has a good, steady life cycle. This phase ensures that the project is operated properly for its intended use and that it is maintained on a regular basis.



Decommissioning Phase is when the project is put out of operation and may involve demolition work.



Construction is such a big field that it encompasses a wide variety of jobs, from engineers and architects to construction managers, site superintendents, foremen, specialized technicians, and unskilled laborers.