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Construction delays : understanding them clearly, analyzing them correctly. Butterworth-Heinemann, c2009.

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Lambeck, Richard. Urban construction project management. McGraw-Hill, c2009.

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Ottosson, Hans. Practical project management for building and construction. CRC Press, 2012.

Winkler, Greg. Construction administration for architects. McGraw-Hill, c2009.

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## Online Subscriptions:

ASCE—Provides the most comprehensive source of civil engineering research through American Society of Civil Engineers (ASCE) proceedings and peer-reviewed journals.

ASTM Standards and Journals—A trusted source of industry standards and technical information developed by the American Society for Testing and Materials (ASTM) International.

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### Disclaimer:

*This pathfinder contains suggested materials on Construction Management that are available at the College of Engineering Library I. However, some references were not included.*

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*We welcome suggestions for new pathfinder topics.*

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# CONSTRUCTION MANAGEMENT

## PATHFINDER



## CONSTRUCTION MANAGEMENT

Construction management or construction project management (CPM) is the overall planning, coordination, and control of a project from beginning to completion. CPM is aimed at meeting a client's requirement in order to produce a functionally and financially viable project. The construction industry is composed of five sectors: residential, commercial, heavy civil, industrial, and environmental. A construction manager holds the same responsibilities and completes the same processes in each sector. All that separates a construction manager in one sector from one in another is the knowledge of the construction site. This may include different types of equipment, materials, subcontractors, and possibly locations.

### FUNCTIONS

The functions of construction management typically include the following:

1. Specifying project objectives and plans including delineation of scope, budgeting, scheduling, setting performance requirements, and selecting project participants.
2. Maximizing the resource efficiency through procurement of labor, materials and equipment.
3. Implementing various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
4. Developing effective communications and mechanisms for resolving conflicts.

[http://en.wikipedia.org/wiki/Construction\\_management](http://en.wikipedia.org/wiki/Construction_management)

## PROJECT STAGES

### 1. Design

The design stage contains a lot of steps: programming and feasibility, schematic design, design development, and contract documents. It is the responsibility of the design team to ensure that the design meets all building codes and regulations. It is during the design stage that the bidding process takes place.

### 2. Pre-construction

The pre-construction stage begins when the owner gives a notice to proceed to the contractor that they have chosen through the bidding process. A notice to proceed is when the owner gives permission to the contractor to begin their work on the project. The first step is to assign the project team which includes the project manager (PM), contract administrator, superintendent, and field engineer.

### 3. Procurement

The procurement stage is when labor, materials and equipment needed to complete the project are purchased. This can be done by the general contractor if the company does all their own construction work. If the contractor does not do their own work, they obtain it through subcontractors. Subcontractors are contractors who specialize in one particular aspect of the construction work such as concrete, welding, glass, or carpentry. Subcontractors are hired the same way a general contractor would be, which is through the bidding process. Purchase orders are also part of the procurement stage.

### 4. Construction

The construction stage begins with a pre-construction meeting brought together by the superintendent. The pre-construction meeting is meant to make decisions dealing with work hours, material storage, quality control, and site access. The next step is to move everything onto the construction site and set it all up.

5. Once the owner moves into the building, a warranty period begins. This is to ensure that all materials, equipment, and quality meet the expectations of the owner that are included within the contract.

[http://en.wikipedia.org/wiki/Construction\\_management#Project\\_stages](http://en.wikipedia.org/wiki/Construction_management#Project_stages)

## SEVEN TYPES OF CONSTRUCTION

1. Agricultural: Typically economical buildings, and other improvements, for agricultural purposes. Examples include barns, equipment and animal sheds, specialized fencing, storage silos and elevators, and water supply and drains such as wells, tanks, and ditches.

2. Residential: Residential construction includes houses, apartments, townhouses, and other smaller, low-rise housing types.

3. Commercial: This refers to construction for the needs of private commerce, trade, and services. Examples include office buildings, "big box" stores, shopping centers and malls, warehouses, banks, theaters, casinos, resorts, golf courses, and larger residential structures such as high-rise hotels and condominiums.

4. Institutional: This category is for the needs of government and other public organizations. Examples include schools, fire and police stations, libraries, museums, dormitories, research buildings, hospitals, transportation terminals, some military facilities, and governmental buildings.

5. Industrial: Buildings and other constructed items used for storage and product production, including chemical and power plants, steel mills, oil refineries and platforms, manufacturing plants, pipelines, and seaports.

6. Heavy civil: The construction of transportation infrastructure such as roads, bridges, railroads, tunnels, airports, and fortified military facilities.<sup>[2]</sup> Dams are also included, but most other water-related infrastructure is considered environmental.

7. Environmental: Environmental construction was part of heavy civil, but is now separate, dealing with projects that improve the environment. Some examples are water and wastewater treatment plants, sanitary and storm sewers, solid waste management, and air pollution control.

[http://en.wikipedia.org/wiki/Construction\\_management#Seven\\_types\\_of\\_construction](http://en.wikipedia.org/wiki/Construction_management#Seven_types_of_construction)