

**AIU Exam – Construction Practices**

**Subject of Courses**: Construction Management

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**Name of study material (video or book)**:

***Construction Project Management***, (**Chapter 1)**

**Link to access study material (video or book):**

[**http://aiustudev.aiu.edu/submissions/profiles/resources/onlineBook/P3W3q5\_construction%20project%20management.pdf**](http://aiustudev.aiu.edu/submissions/profiles/resources/onlineBook/P3W3q5_construction%20project%20management.pdf)

**Exam Starts Here**

**Introduction**:

As a Civil Engineering student I would like to introduce this topic as Construction Project Management. This is the first chapter and seeks to expose the management of construction projects where the owner may be public or private. As a University undergraduate student I will seek to show qualifying application of the concepts learnt and understood in this chapter in the post practicable and professor captivating way possible.

The body of Assignment will be done in the expected writing format consistent with the Universities standard. Furthermore I will enrich the profession of Civil engineering by learning all parts of construction management project. This will prepare me for micro projects as well as macro projects on my native Dominica or any other part of the world like North America and The Caribbean for example.

Construction Management also has to be done the right way and within laws and environmental guidelines. The Team may be led by a Project Manager who will have someone in charge of the Field Construction. However some people and firms are dynamic and when comes to Field Construction the Design Engineer sometimes supervises, but this is rare.

As a civil Engineering student I hope to learn all the techniques available for a young inexperienced Engineer and hopefully become formidable in my skill as an Engineer. Furthermore, I am studying this field to improve on my family’s technical capacity in Engineering.

Furthermore, this is my first formal exposure to Construction Management which looked difficult but with my ingenuity and ambition I think I will be one of the best Civil Engineers ever.

**Questions:**

Answer each question below with complete paragraphs. Give examples from your own experience to illustrate the ideas. As well, give examples on how you would apply the knowledge in your work or life. How would you successfully apply the concepts in your community?

**Chapter 1**

**1. What is the approximate annual value of construction, and how does this compare to the gross domestic product?**

The approximate value of construction is $0.930 trillion as of 2013.This when compared to the Gross Domestic Product is about 5% of the GDP.

The current GDP as of 2013 is $17.103 trillion. Sears et al, 2015 claims that out of every 20 dollars spent on goods and services in the United States is spent on construction. The construction Industry also provides many employment opportunities and touches the lives of many individuals daily.

This value of construction however is an estimated value and the black market value when calculated could boast another significant figure.

2**. If each construction project is unique, how can it be governed by processes that are consistent from job to job?**

Critically, when building a House or nonresidential building Civil Engineers claim that construction of a house or a non-residential building for example are different and use the term “Unique" to describe the particular job. This Civil engineers advocate that every project is unique.

Some of the reasons are that each structure is custom built with different specifications and designs. There are certain designs that are incorporated into the structure to suit the landscape, the materials available and the necessities of the owner. These qualities provide a particular project or job to be different than another job.

Other reasons that make a job unique is the weather, surface topography, subsoil conditions, transportation and utilities and services. Sears et al, (2015).These are valid reasons why a project has the status as Unique.

For example, Mr. Vidal has to repair and extend the sports room of a High school, the planning, design and construction will correlate with the requirements of the Public high school so to the rest of life phases such as operating cost, maintenance monitoring and rest of life. In contrast a United States citizen decides to retire to the Caribbean such as the Turks and Caicos’ Islands, Caymans Islands or Dominica and wants a condomium. The American will want specifications suited for a retiree and new home owner in an island paradise. Thus his or her specifications will be different in terms of the planning and design of the condominium. These are two common examples of unique projects.

**3. What are the three stages of development of a construction project?**

The three stages of development of a construction project according to Sears et al (2015) is:

Stage 1: Planning and Definition Stage

Stage 2: Design stage

Stage 3: Procurement and Construction

Stage 1: Planning and Definition Stage

This is a critical stage of any construction process. The owner is responsible for starting any construction project. The owner based on his personal desires or public preferences will decide and identify the critical needs for a construction project.

The owner plans and decides what will be the best location with qualifying components such as finance, materials, equipment, services and others.

Stage 2: Design stage

At this "Inclusive phase" means it takes up the bulk of the resources in the Initial phases of any Civil Engineering system in this case the system involves Construction management Project.

Stage 3: Procurement and Construction

These are two aspects of construction management project (C.M.P) that are the same and different and have to be implemented in an efficient and professional manner.

**4. What unique part does each of the following play in a construction project?**

a. Owner

The owner has a direct role and is responsible for the affairs of the project. The general control belongs to the owner.

Types of Owners

1. Public Owners:

These are state, federal, county, government controlled as in the United States which is one of the best examples. Other entities of Government such as local government, boards, authorities.

2. Private Owners

These are owners that are non- public and they are private like business, banks, Engineering firms, etc. that are investors.

b. Designer

The Designer could be the owner but the technical Designing could come from several different types of Civil engineering disciplines such as a Design engineer, an architect-design engineer or a civil engineer.

c. General contractor

This type of positions employ all types of skills in Construction projects and sometimes contract work to specialty contractors.

d. Specialty contractor

Personnel in this positions do one skill only on any project. Their management consist of only one skill therefore less performance criteria for this group of employees.

**5. What are the distinguishing characteristics of the following project delivery systems?**

a. Design‐bid‐construct

This type of Project delivery system is practiced as such the designing is done and construction starts. While construction is progressing satisfactorily the designing is continuing as well. This type of construct is also called Phased Construction.

b. Design‐construct

A diagram will be shown to illustrate the employee and direction order of this type of project delivery system.

Fig. Design Construct

Design- construct Project

Owner>Firm>>>>>>1.Design

>>>>>>2.Construction

In the above side arrow diagram the Owner comes first as the Owner of the Project. For example a Complex housing five Doctor Offices, One Restaurant and a Gymnasium. The owner hires a firm. E.g. Roni Engineering Evolutionics. This firm has complete control of the design and construction of the project. The responsibility of materials, aesthetics, planning, design has to be done in satisfaction of the owner and architect-engineer.

c. Construction Management

Definition: The provision of professional management services to the owner of a construction project with the objective of achieving high quality at a minimum cost.(Sears et al,2015)

d. Work‐by‐force account

This type of account involves all the responsibility of planning, design and construction is undertaken by the owner.

The owner who could be public or private doesn't use the services of a General contractor or specialty contractors.

This account is free of contracts as well.

e. Turnkey

This is where the phases of work in the initial systems infrastructure such as planning, design and construction and other added responsibilities such as supervision are done by a prime contractor or General contractor.

During the design part of the Civil engineering system project this is performed by an architect -engineer and the construction by a General Contractor.

f. Integrated Project Delivery

This can be looked at as an evolution of how construction is managed. In this system Engineers use a platform called BMI or Building Information Model. Sears et al, 2015 describes the BMI as a platform where all data for the project goes into a massive database that is shared by all stockholders in the project.

In this type of project management system all the data for the project is integrated into a single entity. Thus the results are characteristic of all stakeholders.

Under this delivery system the best form of contract is a single operational contract.

Sears et al 2015 further states that the Integrated Delivery system ties all stakeholders together based on a single contract that is signed by each stakeholder including the owner, designer, contractors and subcontractors.

This type of delivery system looks to be the way of the future for some Civil engineers and its productiveness will be proven in time to come.

**6. How can an aspiring project manager develop, or a practicing project manager improve, the four essential attributes required for an effective project manager?**

Sears et al, 2015 claims that the Project manager organizes, plans, schedules, and control all the work of the project and is responsible for getting the project completed within the time and cost limitations.The project manager has all the responsibility and is responsible for completing the project. The role of project manager is key to construction management since the Project manager is the person to go to if there is a problem.

In this role their is one Project manager, however in other situations there could be more than one project manager who is responsable for a particular portion of the project.

When there is a large project the project manager role may be greater and he or she will have a team to assist in daily operations of the project.Also most project managers have a field supervisor since the project managers duties are different than field supervision.

Four Essential Attributes of a Project Manager

1) considerable background of practical construction experience

2) available, persons with expertise and experience in the application of specialized management techniques to the planning, scheduling, and control of construction operations.

3) the project manager must have the capacity to step back from the

complex details of daily construction operations and look into the future—

planning for upcoming activities, checking material deliveries, determining

manpower and training requirements, identifying possible changes to the

work, and recognizing other potential problem areas that may develop

4) the project manager must have the personality and insight to

work harmoniously with other people, often under very strained and trying

circumstances.

The above four attributes are provided by Sears et al.2015 are excellent guidelines for a Project Manager. Personally, a Civil Engineer it is always good to work with Construction companies in an internship or during holidays to get that valuable experience. Look at attribute one which talks about the Project Manager having Practical construction experience. Thus if one invests in spending time with a micro or bigger company or even a family business the experience gained would be valuable.

Furthermore the Civil Engineer or Project Manager could develop a group of friends or people who he trust so when he gets projects he can rely on these same people. People can also be hired that fit in this roles that the project Manager requires.

**Conclusion**: In the following space, write 4 to 8 paragraphs to conclude this course.

* Describe the 3 most important concepts you learned in this course.
* How would you use this knowledge to improve your life and work?
* How would you use this knowledge to increase your income?
* How would you use this knowledge to promote human rights in the world?

The United States has a $0.903 trillion dollar Construction Industry and it is growing especially this is expected as one of the world’s biggest economies. Thus this course seek to provide qualifications to access this huge market. This market needs people with the desire and mental inspiration to lead the future. The future, our future needs to evolutionise Civil engineering to make earth sustainable. Construction management can be a major contributor to that objective. This is a huge advantage at a macro-economic level for the Construction Industry.

How would you use this knowledge to improve your life and work?

I intend to join the United States Construction Industry as a qualified Civil Engineer specialized in life cycle phase’s civil engineering systems such as maintenance monitoring, operations and rest of life phases. I also would like to get exposure to different types of construction Projects to get valuable experience and move from there towards owning my own construction firm.

How would you use this knowledge to increase your income?

Firstly, I feel that a technical business is needed in the family and I will open a Civil Engineering and General Contractor firm with facilities and capacity to Design and Construct. This would be one source of Income.

Another source of income would be passing on my skills in the form of a lecturer in college on online in certain courses such as Building Construction.

How would you use this knowledge to promote human rights in the world?

Human Rights is important to each and every human and is governed by the United Nations. Each country has to uphold the human rights of its citizens. For example in the United States Human rights are a fundamental part of the United States Constitution.

Describe the 3 most important concepts you learned in this course

As an active person in the Technical field I understood about the stages of projects such as the design stage. Another key concept learned and appreciated was the classification of construction. Finally, the definitions of general contractors and specialty contractors was enlightening. The concept of Construction Management showed the techniques and definition of what is required. And I felt that the role of a Project Manager was very well explained.

**Bibliography:**

1) Construction Project Management: A practical Guide to Field Construction Management.

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2) Labi, Sam. "Introduction to civil engineering systems." (2014).

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