PRESENTATION

ON

"Building a Career in Civil Engineering: The Rudiments for the Young Engineer"

BY

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What is Civil Engineering

• This is the second-oldest and quintessential engineering discipline after military engineering.

• It was simply designed to distinguish non-military engineering from military engineering. This dates back to the ancient Roman empire.

• Civil Engineers design, construction and maintain a country’s infrastructure.
Specializations in Civil Engineering

Civil Engineering is made up so many specific disciplines, such as:

• Structural Engineering
• Geotechnical/Geo-Structural Engineering
• Waste Water/Environmental Engineering
• Transport Engineering
• Hydraulics/Irrigation/Water Resources Management
• Construction Engineering
• Et cetera
Specializations in Civil Engineering

- Water Resources
- Construction
- Environmental
- Geotechnical
- Urban Planning
- Transportation
- Structural
- Material
**Structural Engineering**

- Structural Engineering is the art and science of conceptualizing, modeling, analyzing, and designing of complex structural systems.

- This profession ensures that forces are effectively resisted without generating stresses beyond the threshold of resistance of various structural elements.

- Such structures include but are not limited to tall buildings, bridges, tunnels, dams, bunkers, silos, etc.

**Load Path**

- The path that a load travels through the structural system
- “Tracing” or “chasing” the loads
- Each structural element must be designed for all loads that pass through it
Structural Engineering Models/Projects
Structural Engineering Models/Projects Contd.
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Geotechnical/Geo-Structural Engineering

• These set of professionals employs the principles of soil mechanics to analyze the effects and behaviour of superimposed loads on soil continua.

• They also employ the principles of structural mechanics to capture the response of the substructure to soil deformation.

• They offer a comprehensive soil-superstructure-foundation interaction of the entire system.
Geo-Structural Engineering Projects Contd.
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Waste Water/Environmental Engineering

• Solve environmental problems related to pollution, water use, materials and energy use, waste treatment, etc.

• Analyze and design water treatment plants and design technology for reprocessing materials

• Clean up hazard waste sites and design methods for reducing pollutants in our atmosphere
Transportation Engineering

Transport Engineers model, analyze and design infrastructures such as:

• Highways
• Railways
• Airports
• Traffic Control Systems
• Et cetera
Hydraulics/Water Resources Management

This involves extensive use of major hydraulic and hydrological data and principles to design facilities such as:

• Drainage systems
• Flood Control levees, dams, lakes
• Navigational waterways
• Detention/retention ponds
• Et cetera
Construction Engineering

These professionals perform the following functions:

• Review contracts

• Orders materials

• Engage and disengage sub-contractors

• Provide quality control and quality assurance

• Monitors project progress using specialized tools

• Ensures project is within budget

• Et cetera
Construction Engineering
Construction Engineering
Prerequisites towards a Positive Career in Civil Engineering

- Sound undergraduate/internship training
- Analytical and technical abilities
- Proficiency in Computer Aided Design (CAD) tools
- Proficiency in the use of Sophisticated Analysis and Design Software Programs
- Multitasking and team building abilities
- Clear career path
- The right motivation
Possibilities for a Civil Engineer

- Private Sector
- Public Sector
- Academia
- Research and Development
- Marketing and Public Relations
- Combination with other disciplines