

PROJECT LEAD THE WAY

PLTW

Igniting imagination and innovation through learning.

A Career in Civil Engineering

Civil Engineering

- What is Civil Engineering
- About Civil Engineering
- Structural
- Environmental
- Geotechnical
- Water Resources
- Transportation
- Construction
- Urban Planning
- Possibilities for a Civil Engineer
- Private versus Public Sector
- Registered Professional Engineer (PE)

What is Civil Engineering?

“Civil engineers are changing the world. They dream up creative, practical solutions that benefit the everyday lives of people and the communities in which we live. They work with smart and inspiring people to invent, design and build things that matter.”

American Society of Civil Engineers



About Civil Engineering

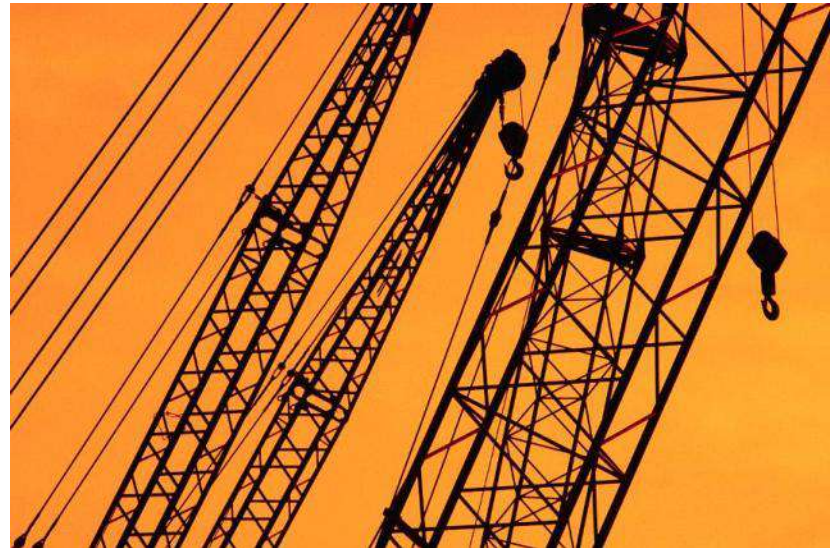
- Civil engineers are wherever people build anything. Some work in offices or labs, and many work at construction sites.
- Civil is the largest field of engineering in the United States.
- 193 Universities offer ABET accredited civil engineering programs.
- Civil engineering is one of the oldest engineering career fields.
- The American Society of Civil Engineers (www.asce.org) is a professional organization for civil engineers.

About Civil Engineering

- The need for civil engineers is expected to grow faster than average compared to other occupations.
- Most Civil Engineers attend a 4 year school, obtain a master's degree, and then combine experience and exam completion to obtain licensure and the title of Professional Engineer (PE).
- Civil engineering technicians (2 year degree) and technologists (4 year degree) work closely with civil engineers.

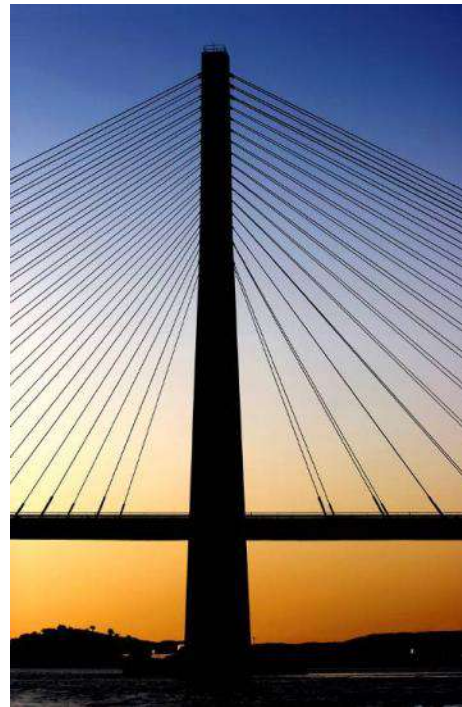
About Civil Engineering

- Civil engineering is a diverse field. Most specialties fall under the categories of
 - Structural
 - Environmental
 - Geotechnical
 - Water Resources
 - Transportation
 - Construction
 - Urban Planning



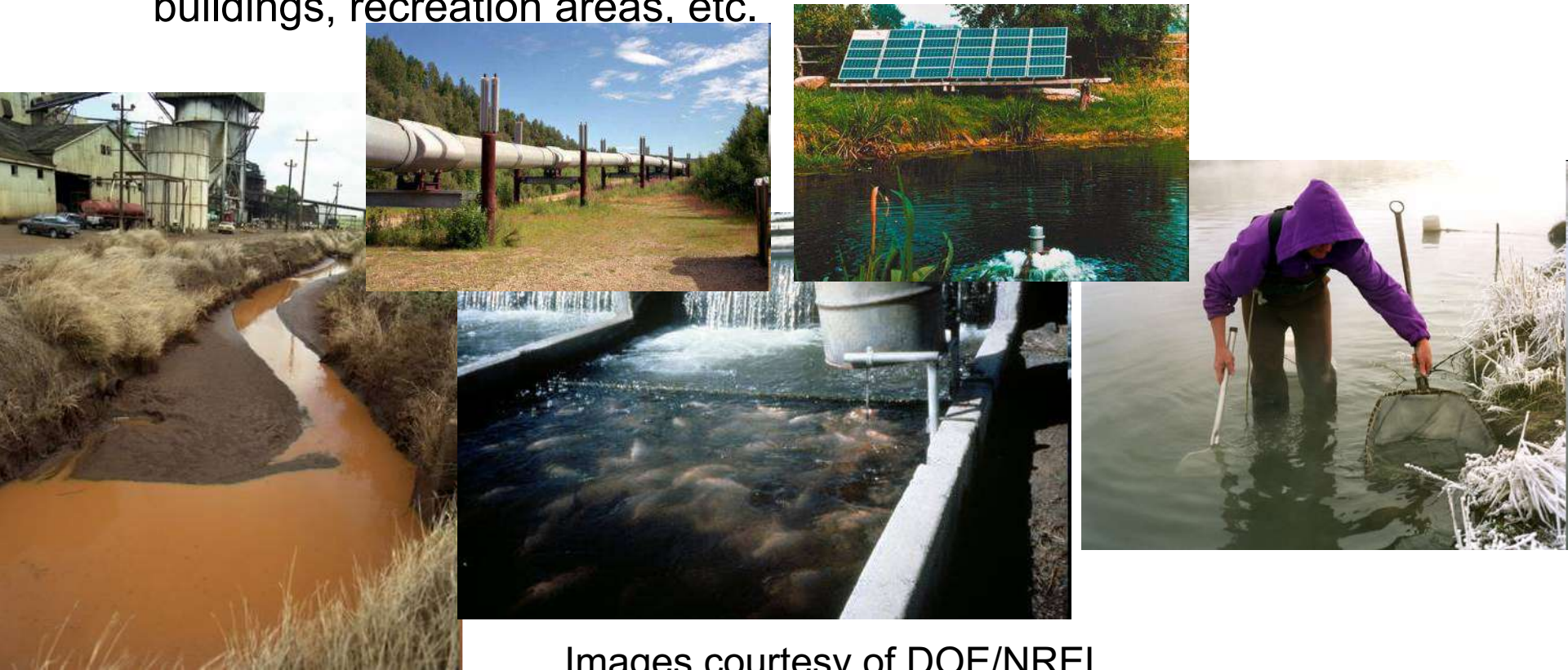
Structural

- Structural engineers design structures to support their own weight and the loads that they carry.
- Structures are designed to resist natural forces such as wind, earthquakes, extreme temperature, hurricanes, and other natural and human-made forces.
- Examples include buildings, dams, highways, bridges, etc.



Environmental

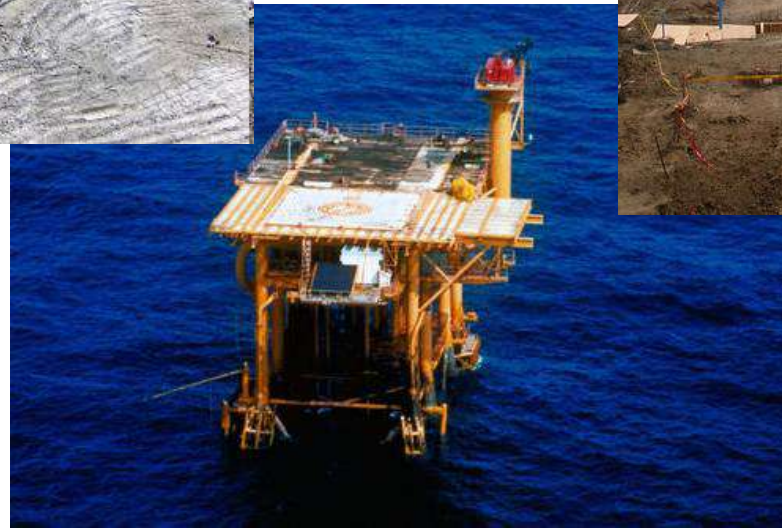
- Environmental engineers improve and maintain the environment to protect and enhance human health along with the world's ecosystems.
- Includes safe disposal or clean up of potentially harmful waste and the design of strategies to protect the environment in products, buildings, recreation areas, etc.



Images courtesy of DOE/NREI

Geotechnical

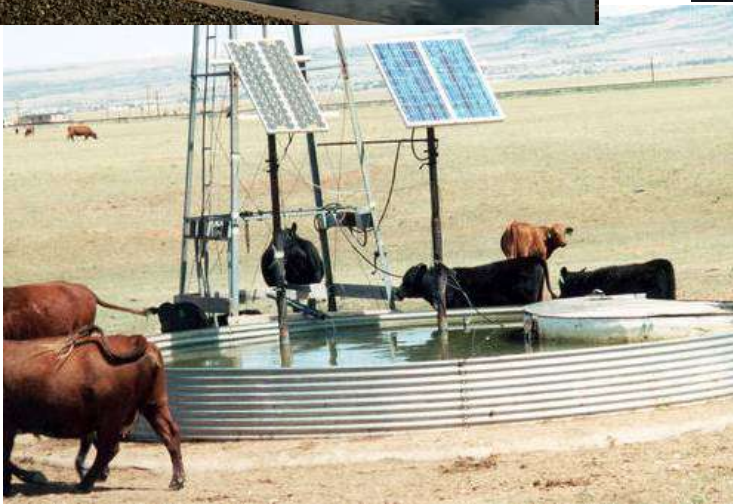
- Geotechnical engineers analyze the properties of soil and rock to determine engineering properties.
- Includes projects such as tunnels, foundations, offshore platforms, etc.



Images courtesy
of DOE/NREL

Water Resources

- Engineers design, supervise, and evaluate systems for controlling, storing, moving, and conserving water.
- Includes providing clean drinking water, protecting beaches, preventing floods, providing irrigation, treating wastewater, etc.



Images courtesy of DOE/NREL

Transportation

- Transportation engineers design, supervise, and evaluate systems for moving people, goods, and materials safely and efficiently.
- Examples include highways, paths, airfields, ports, mass transit, etc.



Construction

Engineers use technical and management skills to turn a design into reality on time and on budget.

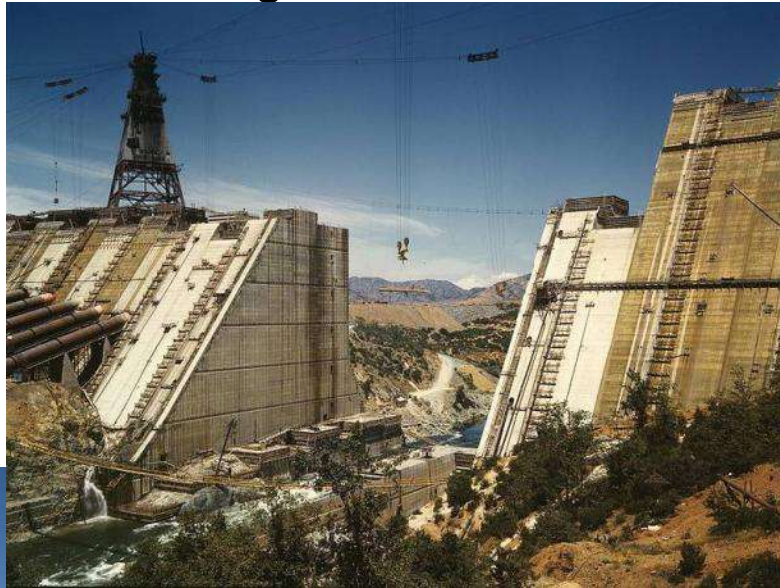
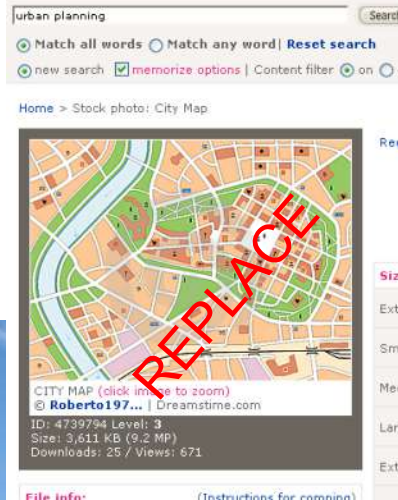
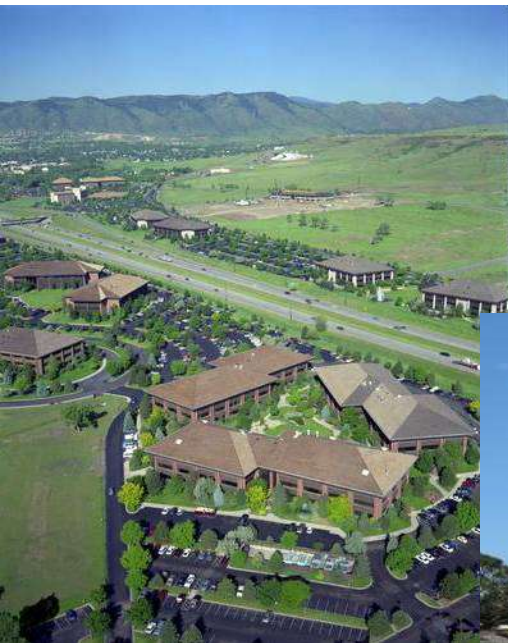


Image courtesy of DOE/NREL

Urban Planning

- Urban planners coordinate the development of a community.
- Examples include projecting street patterns, deciding where parks and recreation areas are best located, determining where residential, commercial, and industrial areas are to be located.



Images courtesy of
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Possibilities for a Civil Engineer

- Private Sector
- Public Sector
- Academia
- Research and Development
- Marketing and Public Relations
- Combined with Other Disciplines

Private vs Public Sector

Both offer

- Project Challenges and Opportunities based on ability
- Opportunities for Professional Growth

Private Sector

PROS

- Better than average starting salaries
- Merit pay increases and/or incentive compensation

CONS

- Shared health plan costs
- Lower than average holiday and sick allowance
- No employer Pension plan

Public Sector

PROS

- Better than average holiday and sick allowance
- Employer paid health plan
- Employer paid Pension plan
- Pay increases based on employment level

CONS

- Lower than average starting salaries

Registered Professional Engineer (PE)

- Graduation from an ABET accredited school/university
- Fundamentals Exam (FE or EIT)
- Work Experience
- Principles and Practice of Engineering Exam (PE)

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Image Resources

Microsoft, Inc. (n.d.). *Clip art*. Retrieved March 18, 2009, from <http://office.microsoft.com/en-us/clipart/default.aspx>

National Renewable Energy Laboratory (2008). *Photographic information eXchange*. Retrieved March 18, 2009, from <http://www.nrel.gov/data/pix/searchpix.html>