Become an Engineer!
“Engineering is the application of math, science, and ingenuity to create something of value from our natural resources to make the world we live in a better place”
Technology & Progress
Famous Engineering Feats

Pyramids of Egypt
2611 BC

Great Wall of China
500 BC

Persepolis
515 BC

Roman Coliseum
80 AD

Washington Monument
1884

Eiffel Tower
1889

Panama Canal
1914

Golden Gate Bridge
1937
Branches of Civil Engineering

- General Civil
- Transportation
- Structural
- Geotechnical
- Construction Management
- Environmental
- Water Resources
- Solid Waste & Wastewater
Infrastructure Projects

- Road and Highways
- Bridges and Tunnels
- Airports
- Sea Ports & Harbors
- Rail & Transit Systems
- Water/Wastewater Treatment Plants
- Water/Wastewater Collection & Distribution
- Streams, Rivers & Dams
- Buildings/Land Development
Life Cycle:
- Planning
- Design
- Construction
- Maintenance

Get involved in one or all phases!
Purpose and Need Identification
Scope Development
Alternative Analysis/Selection
Impact Assessment/Mitigation
Public/Stakeholder Input
Environmental Considerations
Project Funding
- Documentation of Existing Conditions
- Preliminary Design
- Plans, Specifications and Estimates
- Approvals/Permits
Construction

- Project Advertising
- Contractor Bids
- Contract Award
- Survey/Staking
- Material Testing
- Construction
- Change Orders
- Construction Management & Inspection
Scheduled Inspections
Replace/Repair
- Coordinate with Design & Construction
Feedback to Planning, Design, and Construction
Alternative Delivery Methods

- Design and Build
- Design Build
- CMAR/CMGC
- P3
I-405 Sepulveda Pass Improvements

Mulholland Drive Bridge Replacement

Wilshire Blvd Interchange Improvements

Before

After
New Tom Bradley International Terminal
Gerald Desmond Bridge Replacement

- 2013: 18,000 TEU
- 2006: 15,500 TEU
- 1997: 8,100 TEU
- 1996: 7,100 TEU
Gerald Desmond Bridge (now)

Gerald Desmond Bridge (future)
Modern Civil Engineering Projects

800 Meters = 2,625 Feet = ½ Mile!
Modern Civil Engineering Projects - USA

Alameda Corridor

Kansas City Public Library

Port of Long Beach
Modern Civil Engineering Projects - USA

Los Vaqueros Reservoir

Walt Disney Music Hall

Hoover Dam Bypass
Required Skills

- Problem Solving
- Teamwork
- Negotiations
- Math
- Science
- Writing
- Communicating
- Attention to Detail
- Public Speaking
- Presentation Skills
Engineering/Surveying Career Path

- **Education**
  - Bachelors of Science Degree (4 years)
  - Masters of Science Degree (1-2 Years)

- **Engineer/Land Surveyor in Training (EIT/LSIT)**
  - 2 to 4 years Experience

- **Professional Engineer/Land Surveyor (PE/PLS)**
  - Completion of EIT/LSIT training
  - 4 years of Experience
Some California Schools That Offer Engineering Degrees

California State University:
• Los Angeles (CSULA)
• Fullerton (CSUF)
• Long Beach (CSULB)
• Polytechnic University
  • Pomona (Cal Poly Pomona)
  • San Luis Obispo
• Sacramento
• San Francisco
• San Diego
• San Jose

University of California:
• Los Angeles (UCLA)
• Berkeley (Cal)
• Davis
• Irvine (UCI)
• Merced
• Riverside (UCR)
• San Diego (UCSD)
• Santa Barbara (UCSB)
• Santa Cruz

• California Institute of Technology
• University of Southern California
• Stanford University
• Loyola Marymount University
• Claremont Colleges
Employers

- **Public Sector**
  - **Cities** – City of Los Angeles, City of Santa Monica, ...
  - **Counties** – County of Los Angeles, County or Orange, ...
  - **State** – Caltrans, Water Resources Board, ...
  - **Federal** – FHWA, Army Corp of Engineers, Naval Engineering Command, ...
  - **Special Agencies** – MWD, ACTA, Metro, OCTA, etc...

- **Private Sector**
  - Consulting Engineers & Surveyors
  - Land Developers

- **Internships Opportunities**
Salary & Benefits

- Entry Level Salaries: ~$50K to $60K
- Mid-Level Salaries: ~$100K+
- Top Salaries: ~200K+
More Information

- CalSOP: [www.calsop.org](http://www.calsop.org)
- American Council of Engineering Companies (ACEC): [www.acec-ca.org](http://www.acec-ca.org)
- American Society of Civil Engineers (ASCE): [www.asce.org](http://www.asce.org)
- American Society for Engineering Education (ASEE) [www.asee.org](http://www.asee.org)
- Discover Engineering Online [www.discoverengineering.org](http://www.discoverengineering.org)
- National Society of Professional Engineers (NSPE) [www.nspe.org](http://www.nspe.org)
- Society of Hispanic Professional Engineers (SHPE) [www.shpe.org](http://www.shpe.org)
- National Society of Black Engineers (NSBE) [www.nsbe.org](http://www.nsbe.org)
- Society of Women Engineers (SWE) [www.swe.org](http://www.swe.org)