

# Joshua K. Betz – Current Secret Clearance

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## EDUCATION:

- **Colorado School of Mines** **M.S. May 2018**  
Major: Mechanical Engineering GPA: 4.00  
Thermal Fluids PhD Qualification Exam Passed Feb 2018
- **Colorado State University** **B.S. May 2010**  
Major: Civil Engineering GPA: 3.36

## RELEVANT EXPERIENCE AND PROJECT WORK:

### Engineering:

#### **Teaching Assistant, Integer and Linear Programming** **May 2017 – Present**

- Design tutorials and course material for recitation sections to enhance student learning.

#### **Graduate Research Thesis Project: Continuous Casting Schedule Optimization Model** **Jan 2016-Present**

- Built the foundation for a mixed integer program used to optimize throughput of a continuous casting steel mill.
- Employed several variable and constraint reduction techniques that utilize plant best practice rules and safety constraints to improve model tractability.
- Developed and tested software to solve optimization model.
- Documented software process, procedures and practices in a timely manner.
- Constant work and communication with industry partner to tailor the model to their specific mill needs.

#### **Team Project Experience:** **Jan 2016 – May 2018**

- **Heat Transfer:** Transient heat transfer model of a concentrating solar power tower using historical heat flux data. Program written in MATLAB.
- **Computational Fluid Dynamics:** Steady state modeling of a wind power turbine using ANSYS Fluent which was validated using experimental data found in literature.
- **Viscous Flow and Boundary Layers:** Development of a steady state model to calculate the entry length for incompressible flow through rectangular channels to determine under what conditions entry effects are negligible. Program written in MATLAB.
- **Advanced Engineer Analysis:** Determination of unknown boundary conditions given a source inside a closed domain using boundary element methods. Program written MATLAB.

#### **Short Elliot Hendrickson, Inc** **Summer 2009, May 2010 – Sep 2011**

- Analyzed data for the City of Centennial and conducted site visits to develop cost vs need approach to the design the city's roadway rehabilitation program to maximize its cost efficiency.
- Assisted in the development of technical specifications for contractors.
- Enforced specifications during construction through field inspections and material testing.

### Military:

#### **United States Marine Corps (Reserves), Luke Air Force Base, AZ** **Jul 2017 - Present**

- Company Executive Officer, Bulk Fuel Company C, 6th Engineering Support Battalion.
  - Ensure the administrative and technical development and readiness for a company of over 350 Marines.

#### **United States Marine Corps (Active Duty), Camp Pendleton, CA** **Oct 2011 – Dec 2015**

- **1st Combat Engineering Battalion:** **Nov 2012 – May 2014**
  - Deployed to Afghanistan in support of Operation Enduring Freedom as a platoon commander. Primary mission while deployed was route clearance; also conducted several force protection assignments to analyze and mitigate current theater threats.
- **1st Light Armored Reconnaissance Battalion:** **May 2015 – Dec 2015**
  - Trained leaders of a highly-specialized unit on relevant engineering operations, capabilities and limitations; adapted quickly to a unit outside of my occupational specialty.
  - Supported a multinational field exercise on deployment to Jordan; contributed to the design and oversight of defensive perimeter construction and provided security for airfields used by American and British aircraft.

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## TECHNICAL SKILLS AND PROFESSIONAL ATTRIBUTES:

**Mechanical Engineering:** Fluid Mechanics, Computational Fluid Dynamics, Heat Transfer, Numeric Modeling, Finite Element Analysis and Non-Linear, Linear, Integer and Network Optimization

**Civil Engineering:** Structural Analysis, Steel and Reinforced Concrete Design, Mechanics of Materials, Dynamics, Statics

**Software:** Software Development and Testing in a Linux Environment, Process, Procedures and Practice Documentation for Optimization Modeling. Coding Proficiencies: ANSYS Fluent, MATLAB, Mathematica, LaTeX, AMPL, Microsoft Excel, PowerPoint, Word

**Military:** Current Secret Clearance, Summer Mountain Leaders Advanced Course, Winter Mountain Leaders Advanced Course, Fire Support Coordination Center Course, Engineers Officers Course, The Basic School

**Strengths:** Written and Oral Communication, Eager to Perform, Quick Learner, Adaptable, Creative Problem Solving, Project Management, Teamwork Oriented, Leadership, Self-Motivated

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## AFFILIATIONS:

- American Society of Mechanical Engineers
- Marine Corps Reserves
- US Citizen