Chengjun Lei

2959 Northern Blvd, Long Island City, NY, 11101| (651)348-0676 | cl4226@columbia.edu

EDUCATION

Columbia University New York, NY

M.S in Civil Engineering (Structural Engineering, Computational and Data-Driven Engineering Mechanics) Jan 2022—May 2023

Related Coursework: Advanced Design of Steel Structures, Design of Large-Scale Building, Seismic and Wind Design, Finite Element Analysis, Elastic/Plastic Analysis of Structure, Multi-Hazard Design of Structure

University of Minnesota, Twin Cities Minneapolis, MN

B.S.in Civil Engineering (Structural Engineering) Sep 2017—Dec 2021

Related coursework: Steel and Concrete Design, Reinforced Concrete II, Capstone Design of Civil Engineering

PROFESSIONAL EXPERIRENCE

Sichuan Southwest Jiaoda Civil Engineering Design Co. LTD Chengdu, CN

Engineering Design Intern 2020—2021

The Overpass Reconstruction Project of Fenghuangshan Tunnel and G210 Highway July 2021—Sep 2021

- Performed shop drawing reviews for the reconstructed overpass and checked the erection plans of the overhead sign.
- Visualized and validated calculation checks for different load conditions on the bridge pier using computer software.
- Conducted the site investigation and understood the scale, the construction process, and the structural characteristics of the project.

The Urban Transportation Plan of Dazhou City. Jun 2020—Sep 2020

- Performed on-site measurement of all regional signs (plants, traffic lights, utility poles, etc.)
- Collected data included the number of cars, cycle length of traffic lights, and corresponding green time, and yellow intervals at the selected road section. Plotted and analyzed the recorded data.

ACADEMIC PROJECTS

The Design of Shanghai Tower Columbia University

Advised by Eli B. Gottlieb and Richard Tomasetti from Thornton Tomasetti Jan 2022—May 2022

- Developed typical bay studies for floor framing by comparing steel framed with composite slab on-deck, flat plate concrete, post-tensioned concrete, and concrete beam and joist. Chose and sketched the most efficient floor framing.
- Performed wind and seismic design analysis, including building period, response spectrum, floor shear, overturning moment, and building drifts for further lateral system analysis.
- Compared the load path analysis of the braced tubular system and the diagrid system. Performed designs of Columns and Lateral Bracing for braced tubular system and diagrid diagonals for diagrid system and chose the better one by comparing weight.
- Completed detailed designs of drilled rock sockets foundation and mat foundation based on geotechnical report for the site.
- Verified and optimized the designs by modeling 3D structures in SAP2000 to check floor shear, overturning moment, building deflection, creep and shrinkage, blast analysis, and system redundancy.

Design of Structures to Resist Extreme Loads—Multi-hazard Consideration Columbia University

Advised by Raymond Daddazio and Virginia Mosquera from Thornton Tomasetti Sep 2022—Dec 2022

- Performed seismic design analysis for a three-story concrete structure, including the determination of seismic forces and shears, floor stiffness, forces due to direct shear and torsional moment in each direction.
- Conducted blast analysis for the one-way slab. Determined the maximum displacement of the slab by finding its pressure and impulse, equivalent Elastic Perfectly Plastic Resistance Function, and the estimated ductility.
- Completed flood design and check hydrostatic and hydrodynamic pressures and potential debris impact load.

Heat Conduction in an Airplane Fuselage due to Solar Radiation Nov 2022—Dec 2022

- Conducted the Finite Element Method to verify the heat conduction in an airplane fuselage by deriving the FEM weak form and applying Galerkin's method.
- Generated 2D finite element models in Abaqus with coarse and fine mesh to obtain the element connectivity and nodal coordinates for further use in MATLAB. Coded heat conduction for two types of mesh and visualized the temperature field distribution and flux heat flow in the structure. Compared the physical and numerical methods.

TECHNICAL SKILLS

FE certified, AutoCAD, Civil 3D, Revit, SAP2000, ETABS, Abaqus, MATLAB, C++, Python