

PRABODH DAHAL, Ph.D.

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SUMMARY

Bridge Engineer with effective managerial, leadership and problem-solving skills, working at California Department of Transportation as a bridge engineer under seismic and special analysis (SASA) branch, and is on a track to get PE and SE licensure. Always working to leverage the strong background in seismic sectors into the design, analysis and retrofitting of different types of structures. 5+ years of experiences in academic (teaching), research and industrial sectors being involved in both of the technical and administrative aspects. Also, interested in disseminating the knowledge for the upcoming engineers via teaching, mentoring and conducting various workshops so as to explain everything in the most understandable and convincing way.

EDUCATION

UNIVERSITY OF MISSISSIPPI, University, Mississippi

Ph.D. in Engineering Science, Structural Engineering

Dissertation: *Incorporation of Post-Earthquake Fire (PEF) and Aftershock for Multi-hazard Analysis of Steel Buildings.*

Advisor: Christopher L. Mullen, Ph.D., P.E.

2016-2020

TRIBHUVAN UNIVERSITY, Kathmandu, Nepal

Central Campus, Pulchowk, IOE

Bachelor of Engineering, Civil Engineering

2010-2014

ACADEMIC TEACHING EXPERIENCES

UNIVERSITY OF MISSISSIPPI, Oxford, Mississippi

August 2016- December 2020

***Teaching Assistant** responsible for helping the instructors and students (graduate and undergraduate) for the course works, lab classes and projects, including online Blackboard support with downloadable instructional computer programs, network-based, state-of-the-art commercial software in the classroom.*

- **Finite Element Analysis**
 - Demonstrated the application and usage of analysis of structural system in ABAQUS/CAE and SAP 2000.
 - Helped students with their project and complexities during their course-work.
 - Graded the assignments for classes of 10+ grad students.

- **Senior Design Classes**
 - Developed the tools for calculating the seismic and wind forces as per the provisions indicated in latest IBC, ASCE and AISC standards- prior to the development of ASCE Hazards Tool.
 - Assist them with the development of the structural models of bridges and building in SAP 2000 and PROKON.
 - Present some research ideas to help the students understand the real life scenarios of the contents they are studying.

- **‘Design of Steel Structures’, ‘Structural Analysis’ and ‘Statics’**
 - Instruct students under the direction and guidance of teachers.
 - Organize classes for SAP 2000 and instruct them.

- Present some research ideas to help the students understand the real life scenarios of the course contents they are studying.
- Evaluate the assignments and projects of the whole class with 40+ students.
- **Lab Assistant**
 - Help the instructor conduct the lab classes for Junior and Senior years' students.
 - Assist them with performing calculation and creating graphs in different software
- **Soil Mechanics**
 - Perform grading and help with examination invigilating and assisting 50+ students as per the guidance provided.

UNIVERSAL ENGINEERING AND SCIENCE COLLEGE, Nepal.
November 2014-April 2015

***Part Time Student Mentor** primary responsibility for teaching the following courses having approximately 30-50 undergraduate students, including the field trip to the different construction sites.*

- **‘Applied Mechanics (Statics and Dynamics)’, ‘Theory of Structures’, ‘Design of Reinforced Concrete Structures’**
 - Instructor for the courses related to the structural field, and mentoring them for the project works related to the field.
 - Introducing the students (30+) with the software like SAP 2000 and ETABS and helping them learn the simple analysis in the software.

GOODWILL ENGINEERING SOLUTIONS PRIVATE LIMITED, Kathmandu, NEPAL.
January 2015

***Crash-Course Instructor** primary responsibility for conducting the professional software classes in the limited time frame*

- **Auto-CAD, SAP 2000**
 - Organized 22 days crash course for the two software among 50+ rising civil engineers.
- Helped them learn the advanced level skills of drafting and modeling of buildings and bridges.

ACADEMIC RESEARCH EXPERIENCES

UNIVERSITY OF MISSISSIPPI, Oxford, Mississippi.
August 2016- August 2020

***Research Assistant** responsible for stability analysis of structural systems and multi-hazard objective resilience for infrastructural facilities.*

- Finite Element Modeling of buildings, bridges and aircraft.
- Linear and non-linear static and dynamic analysis of structures.
- Application of Hazard-Independent Damage Techniques to perform researches on responses of structural components and system as a whole.
- Multi-Hazard Analysis – simulation of different natural and manmade hazards
- Objective Resilience (Earthquake, Hurricane, Flood, Blast, Tsunami Simulation and its analysis to the structural System)

JOURNAL PUBLICATIONS

Dahal P, Powell T, & Mullen C. (2019). "Hazard- independent Stability Sensitivity Study of Steel and RC Frame Structures", *Journal of Civil Engineering and Construction*,08(02), 63-69. doi: <https://doi.org/10.32732/jceec.2019.8.2.63>

Dahal P, & Mullen C. (2020). "Incorporation of Post-Earthquake Fire (PEF) and Subsequent Aftershock for the Performance Analysis of Steel Buildings.", *Structures* (33), 3810-3821. Doi: <https://doi.org/10.1016/j.istruc.2021.06.104>

Dahal P, Mullen C, & Yarbrough L D. (2020). "Drone-Enhanced Rapid Visual Assessment for Disaster Resilience Indexing of Select UM Campus Buildings." (in Preparation)

CONFERENCE PROCEEDINGS PAPERS/ PRESENTATIONS

Conference Presentations:

"Consideration of Post-Earthquake Fire Scenarios for the Objective Infrastructure Resilience", Session: Multi- hazard Considerations for Objective Infrastructure Resilience, **EMI 2019**, Caltech, CA

"Hazard-Independent Stability Sensitivity Study of Steel and RC Frame Structures", **International Conference on Applied Mechanics and Civil Engineering (AMCE)- Dec 29-30, 2018**, Hong Kong.

"Hazard-Independent Study of the Stability Sensitivity of the Low Rise Frame Systems Subjected to the Extreme Loading Conditions", (with C. Mullen), ID: A0247, **Engineering Mechanics Institute(EMI) International Conference 2018, November 2-4**, Tongji University, China.

"Comparison of Stability Sensitivity of Steel Frame and RC Moment Resisting Frame in terms of Asymmetric Hazard Independent Damage Scenarios," (with C. Mullen), Session: Robustness of Infrastructures, **EMI 2018**, Massachusetts Institute of Technology (M.I.T), Cambridge, MA

"Enhancing Asset Modeling and Design to Improve Community Hurricane Resilience" (with C. Mullen), Session: Asset vs. Community Resilience, with lessons, applications, and knowledge gaps from hurricane Harvey Practice, **EMI 2018**, Massachusetts Institute of Technology (M.I.T), Cambridge, MA

"Effect of Severe Scour on Seismic Vulnerability of Aging Highway Bridges," (with C. Mullen and Trey Powell), Session MS-91: Advanced Analysis for Earthquake Engineering, **EMI 2017**, San Diego, CA

"Stability Sensitivity of Low-rise Steel Moment Frames to Asymmetric Distributed Damage States," (with C. Mullen and Trey Powell), Session MS-152: Robustness of Infrastructures (Progressive Collapse), **EMI 2017**, San Diego, CA.

"Asset and System Modeling- Objective Resilience," (with C. Mullen), Session MS-163: Introduction to EMI Objective Resilience Manual of Practice, **EMI 2017**, San Diego, CA

Poster Presentations:

"Hazard Independent Stability Sensitivity Analysis of Low-rise Steel and Concrete Frame Buildings Experiencing Extreme Loading", Poster Presentation, **Infrastructure Resilience Workshop**, March 2018, University of Mississippi, University, MS

PROFESSIONAL REGISTRATIONS

E.I.T. (# 31226)

Category 'A' Civil Engineer – Nepal (11373- NEC registration number)

PROFESSIONAL SOCIETY MEMEBERSHIP SERVICES

American Society of Civil Engineering (ASCE) -Associate Member (ID:11302279)

Earthquake Engineering Research Institute (EERI)- Associate Member (ID: 19467)

Structural Engineering Institute (SEI)

Advisor, Nepalese Students' Association at Ole miss (NEPSA)

Registered Engineer, Nepal Engineering Council (Reg. no: 11373)

Past Member, Nepal Engineering Association

Past Member, Civil Engineering Students' Society (CESS Nepal, Pulchowk Campus), Public Relation coordinator

Past Member, Civil Engineering Students' Society (CESS Nepal, Pulchowk Campus), General Member

TECHNICAL PROFICIENCIES

Competencies:

- Finite Element Analysis (strong background in non-linear dynamic analyses) ABAQUS CAE (4 years), SAP 2000 (7 years), ETABS (7 years), Open Sees (basic), CSI Bridge | Steel, RC, Wood, Masonry structures
- Design standards 2018 IBC, ASCE 7-16, ANSI/AISC 341-16, ANSI/AISC 360-16, AISC 325, ACI 318-14, ACI 360R-10 and Eurocode | AASHTO LRFD, PCI
- Intermediate knowledge on *Machine Learning* and *Artificial Intelligence*

Other software Skills: PROKON| Auto-CAD| Land Development| Civil 3D| HAZUS-MH| GIS (ArcGIS and Q-GIS) | CES EduPack

Computer Skills: Programing Languages (Python- SciPy and NumPy, C) | MATLAB| HTML| Mathematica| Microsoft Office

PROFESSIONAL EXPERIENCES

CALTRANS (California Department of Transportation), Sacramento, CA
March 2021- Present

Bridge Engineer at *Seismic and Special Analysis (SASA) branch.*

- Seismic analysis and design of different bridges for the new construction, widening or the retrofiting measures.
- Performing check flood scenarios of the couple of bridges.

WE WORLD ONLUS (International Non-Government Organization, Italian), NEPAL
February 2016- July 2016

Civil Structural Engineer responsible for the reconstruction, retrofitting, and maintenance of school buildings affected by Gorkha Earthquake of 2015, Nepal.

- Supervise and finalize structural design/ sketch (1-2-4-8 roomed school building, permanent school toilet) prepared by Nepalese Government.
- Prepare and submit Bill of Quantities (B.O.Qs) and budget estimation on construction/ renovation of school premises and facilities and of school Wash intervention as well, as per governmental guidelines when required.
- Identify and implement retrofiting solutions to partially damaged school buildings when

Required

- Investigate damage, accidents, delay at construction sites to ensure that proper procedures are being carried out.
- Oversight the construction activities and schedules on the building contractor onsite as per the schedule.
- Take actions to deal with the results of delay on construction sites.
- Analyze risk associated with natural disaster including wind, earthquake, fire and floods, while design structures.
- Develop and implement quality control tools.
- Monitor construction quality across construction sites based on National and International seismic resistant standards.
- Interact with communities and educate them on construction quality standards, measures and practices.
- Monitor construction progress to ensure that procedures, materials and equipment comply with approved project plans, specifications and samples as per agreed standards and quality.
- Coordinate the construction activities with local partners' engineers.
- Provide feedback to supervisors and team and discuss regularly with them.

SAMRIDHA NEPAL ENGINEERING SERVICES AND RESEARCH CENTER PVT. LTD., NEPAL.
August 2015-August 2016

***Technical Director (Board Member)** responsible for the management of the technical aspects of the firm with a prime motto- "Enhancing Quality, maintaining integrity, and prospering sustainability" (80K USD turnover)*

- Financial, strategic and tactical management of the execution of the projects awarded.
- Resource Capacity Management against the on-going project demands.
- Collaboration with project leadership in project planning, resourcing and risk management and quality management.
- Ownership of hiring process of new consulting team members.
- Personnel Management
- Training, professional development and career planning for consulting team.

DIYO NEPAL, NGO / Creative Services Pvt. Ltd., NEPAL.
May 2015- July 2015

***Structural Engineer** responsible for the starting phase of "Interlocking Bricks Technology of Construction"*

- Structural Design of the building made with Interlocking Bricks Technology
- Ensuring Strength and Quality Control of the materials utilized in making interlocking bricks (Factory Work)

CADS CONSULTANCY & HYDRO-RESEARCH PVT. LTD., NEPAL.
October 2014- April 2015

***Civil Engineer** responsible for the design, repair, maintenance and retrofitting of RC framed and masonry buildings*

- Structural analysis of the residential and commercial multi-storied building using SAP 2000 and ETABS.
- Site Supervision on construction sites.
- Co-ordination, communication and discussion with client.

CADS CONSULTANCY & HYDRO-RESEARCH PVT. LTD., NEPAL.
January 2014- August 2014

***Civil Engineering Intern** responsible for the drafting and report writing works*

- Preparation of Auto-CAD drawings of different structural members.
- Writing technical and financial proposals for submitting the bid to the invited tenders.

VOLUNTEERING WORK

Relief Programs on Earthquake affected 14 Districts after devastating Earthquake of April-25 (May 2015), NEA

Visual Damage Assessment and **Detail Damage Assessment** of RCC or masonry buildings with a team of Structural Engineers, (May 2015 –June 2015)

LEADERSHIP

Technical Director, Samriddha Nepal Engineering Services and Research Center Pvt. Ltd., NEPAL, Est. 2015

Public Relation Coordinator, 6th National Civil Engineering Exhibition cum Competition, CESS NEPAL, Dec. 2013

HONORS AND AWARDS

Dissertation Fellowship (*Jan 2020*)

Student Development Grant Award, Division of Student Affairs, The University of Mississippi (*April, 2019*)

School of Engineering Award, Wood Society, School of Engineering, (*May 2018*)

Graduate School Fellowship, Graduate School, (*May 2017 & May 2018*)

Graduate Assistantship, Department of Civil Engineering, University of Mississippi (*August 2016- Present*)

Summer Fellowship, Graduate School, University of Mississippi (*May 2017 & May 2018, two times*)- *Awarded to only one from each department*

Merit Based Scholarship to Pursue Bachelors in Civil Engineering, Tribhuvan University, Institute of Engineering (*Dec 2010- Dec 2014*)