Durga KC

San Antonio, Texas

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Structural engineering graduate researcher with hands-on experience in full-scale experimental testing, prestressed concrete bridge research, structural analysis, and design.

EDUCATION

University of Texas at San Antonio San Antonio, Texas

Master of Science in Civil Engineering (Structural Engineering) *Expected: Aug. 2026*

Advisor: Wassim Ghannoum, Ph.D., P.E.

Relevant Coursework: Design of Prestressed Concrete Structures, Advanced Behavior of Reinforced Concrete, Advanced Structural Analysis, Earthquake Engineering, Finite Element Methods, Experimental Stress Analysis

GPA: 3.95/4.00

Tribhuvan University, IOE, Pulchowk Campus Lalitpur, Nepal

Bachelor of Engineering in Civil Engineering *Apr. 2022*

Ranked 71st out of 13,000 applicants in IOE entrance examination; awarded full 4-year merit-based scholarship

Relevant Coursework: Design of Bridges, Design of Steel Structures, Design of Reinforced Concrete Structures

GPA: 3.79/4.00

MS THESIS RESEARCH

Anchorage of 300 ksi Prestressing Strands in Prestressed Concrete Girders

TxDOT-Funded Research | The University of Texas at San Antonio

- Evaluate transfer and development length of 0.6 in., 300 ksi strands in full-scale TxDOT girders (Tx28 and Tx46)
- Quantify influence of concrete strength (7 ksi, 10 ksi, and 13 ksi) and member depth on strand bond performance
- Assess AASHTO LRFD and ACI 318 transfer and development length provisions for 270 and 300 ksi strands
- Conduct comprehensive tension testing of 270 and 300 ksi strands; evaluate ASTM A416 1% EUL yield strength definition against 0.1% and 0.2% proof-stress criteria
- Measure long-term transfer length, and creep and shrinkage losses using fiber optic sensors
- Develop evidence-based recommendations for TxDOT on adoption of 300 ksi strands in prestressed bridge girders

TECHNICAL SKILLS

Structural Analysis, Design, & FEA: PGSuper (Bridge Link), CSi Bridge, SAP2000, ETABS, Abaqus

Design Codes: AASHTO LRFD, ACI 318, ASCE 7, NDS, ACI/PCI 319, AISC 360, TxDOT Bridge Design Manual

Instrumentation & DAQ: Fiber optic sensors, Wheatstone bridge sensors, DIC, FlexLogger, ODiSI 6100

Programming & Computation: MATLAB, Python, Excel VBA, MathCAD

Drafting: AutoCAD, Civil 3D, Sketchup

General: Microsoft Office Suite, Technical Report Writing, LaTeX

EXPERIENCE

Graduate Research Assistant San Antonio, Texas

The University of Texas at San Antonio *Jan. 2024 – Present*

- Lead a 10-specimen anchorage and flexural testing program on full-scale TxDOT girders; coordinate with precast plant for girder fabrication, instrumentation, and testing
- Co-lead a 17-girder experimental program investigating 300 ksi strands for prestressed concrete bridge girders
- Manage up to 9 research personnel during prestress release-day data acquisition and supervise undergraduate researchers for ongoing laboratory testing
- Design and implement instrumentation systems integrating 150+ sensors per cast across three DAQ platforms
- Develop computational workflows to synchronize multi-sensor datasets, automate data post-processing, and analyze structural response data

Assistant Lecturer Dang, Nepal
Rapti Engineering College *Apr. 2023 – Nov. 2023*

- Taught undergraduate courses: Strength of Materials, Design of Reinforced Concrete, and Numerical Methods
- Developed and conducted laboratory sessions
- Supervised student capstone projects and mentored students through design and analysis tasks

Civil Engineer Dang, Nepal
Prominent Engineering Services *Jul. 2022 – Apr. 2023*

- Designed reinforced concrete framed residential buildings using ETABS and prepared structural drawings in AutoCAD
- Conducted site visits to supervise the construction and coordinated with clients, architects, and contractors through project cycle

PROJECTS

Design of Reinforced Concrete T-girder Bridge over Rapti River | ***Undergraduate Capstone Project*** *2022*

- Designed 2-span Reinforced Concrete T-girder bridge; superstructure, bearing, and substructure
- Conducted traffic analysis, topographical survey, hydrological analysis, structural analysis and design, and prepared structural drawings

Design of a Post-tensioned Prestressed Girder Bridge | ***Design of Bridges Course Project*** *2022*

- Designed a 40 m span post-tensioned concrete girder bridge superstructure; performed load analysis, prestress loss calculations, tendon profile design, and flexural and shear capacity checks

Design of a 10-story Office Building in Seattle | ***Earthquake Engineering Course Project*** *2024*

- Performed seismic analysis and design using ETABS per ASCE 7 load combinations
- Designed and detailed beams, columns, and shear walls per ACI 318 and prepared structural drawings

CERTIFICATIONS

Fundamentals of Engineering (FE Civil) Exam – Passed *2025*
Registered Civil Engineer – Nepal Engineering Council *2022*

PUBLICATIONS

- **KC, D.**, Basnet, A., Matamoros, A., Ghannoum, W., and Schultz, A., "Distributed Fiber Optic Sensing in End Regions of Full-Scale Plant-Cast Pretensioned Girders with 2070 MPa Strands," *SFR-EuroBridge 2026*, Edinburgh, 2026. (Abstract Accepted)
- Basnet, A., **KC, D.**, Schultz, A., Matamoros, A., Ghannoum, W., "Application of 300 ksi (2070 MPa) Strands in Pre-stressed I-Girders," *12th International Conference on Short and Medium Span Bridges (SMSB)*, Vancouver, Canada, 2026. (Accepted)
- Basnet, A., **KC, D.**, Ghannoum, W., Schultz, A., Matamoros, A., "Evaluating the Use of Grade 2070 MPa (300 ksi) Strand in TxDOT Prestressed Girders," *SFR-EuroBridge 2024*, Edinburgh, 2024.

REFERENCES

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