

KRISHANU ROY

University of Auckland, New Zealand.

Personal Details

Date of Birth	03/04/1991
Nationality	Indian
Languages	English(S/R/W), Hindi(S/R/W), Bengali(S/R/W).
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Phone No.	+64 223917991
Department	Civil Engineering (PhD student)
Specialisation	Structural engineering (structural mechanics, cold formed steel, finite element modelling, roof claddings, wind loading, building information modelling, structural dynamics, slopes and foundations, biochar concrete, building information modelling, estimation, construction management)

Education

December 2015 till date	PhD ongoing, Civil and environmental Engineering, (Specialization in Structural engineering), University of Auckland, New Zealand.
July 2012 to June 2014 (2 Years)	M. Tech., (Masters) Geotechnical Engineering (Soil Dynamics), Indian Institute of Technology Roorkee (IIT Roorkee) India. (CGPA- 8.1/10)
Aug 2008 to June 2012 (4 Years)	B. Tech., (Bachelor degree) Civil Engineering, West Bengal University of Technology, West Bengal, India. (CGPA- 9.23/10)

Academic Achievements

PhD Project (ongoing)

December 2015
to till date

PhD Project: “Behaviour of design cold-formed drape curved roof claddings subject to wind uplift and cyclonic loading”.

Summary of the project: Crest and pan-fixed cold-formed drape curved roof claddings made of thin, high strength steels often suffer from pull through failures under wind loads, mainly at the screw connections. Loss of roof cladding can lead to progressive collapse of the whole structure. The connection between the crest-fixed steel roof sheeting and battens/purlins is the weakest link in the structural system carrying wind uplift loading, due to premature local pull-through and dimpling failures.

Most of the buildings in New Zealand are low rise buildings and the use of metal roof sections, have been significantly increased. New Zealand’s relatively windy climate provides plenty of driving force for air movement through the large volume of roof space. The height of the roof from ceiling to ridge provides for further air movement via the stack effect. Therefore, New Zealand roof sections often suffer from fastener failure, which leads to moisture problem and leakage through the fastener holes. Current standards and design guidelines do not include any design formulae to calculate local failure loads under wind uplift and cyclonic loads for cold-formed drape curved roof claddings.

The aim of this research study is to investigate the performance of 0.55 mm base metal thickness cladding systems of different geometries under wind uplift and

cyclonic load. Geometric imperfections are measured using a specially designed laser scanner. A validated finite element model will provide a simple design method for steel cladding system under wind uplift and suction loading for cold-formed drape curved roof claddings.

June 2013
to June 2014

M Tech Thesis (completed)

M-Tech Project: "Modeling of Soil Liquefaction by Finite Element Method".

- Used nonlinear constitutive analysis for two-dimensional modelling in FEA Open system earthquake engineering simulator. (Opensees)
- Used equivalent linear approach and nonlinear approach for the two-dimensional liquefaction behavior in Roorkee soil using a package QUAKE/W, 2012.
- Comparison of 3D and 2D approaches to arrive at Liquefaction potential, excess pore pressure ratio and liquefaction induced settlement at Roorkee soil.
- Study of various soil parameters and Slope parameters on Liquefaction potential.

January 2010
to June 2012

B Tech Project (completed)

Design of Multi-storey R.C.C Building elements (G+4 storey Building)

- Design of Slab, Beam, Staircase, Column, Footing using Auto cad 2008 and Stadd- Pro v8i.
- Prepared a detailed design report for the project.

Scholarships/ Awards

July 2017
June 2014
August 2012

- Postgraduate Publication Award – University of Auckland.
- IIT Roorkee Research Award.
- Top Scientific Student and Honoured by president of the West Bengal University of Technology.
- Junior Research Fellowship from Indian Institute of Technology Roorkee. I was awarded the MHRD Scholarship for completing masters' study at IIT Roorkee.

June 2012 to May 2014

Committees and Professional groups/Services

- International Journal of Materials Science: **Editor**
- International Journal of advanced and applied sciences (IJAAS): **Editor**
- Structural Engineering Society New Zealand (SESOC): Member
- Engineers India: Professional Engineer
- Journal of Institution of Civil Engineers (ICE): **Reviewer**
- MOJ Civil Engineering: **Reviewer**
- Institute of Engineers, India-Member

Software Packages

- Computer programming in C, MS Office and Macromedia Flash
- Abaqus, Ansys, Plaxis, Python and Matlab.
- Autocad, Stadd-pro, SAP-2000

Career objective

To work in a dynamic and challenging research environment that offers personal development while being resourceful, innovative and flexible.

Work experience

July 2017 to Nov 2017

Worked as Graduate teaching assistant (GTA) from at University of Auckland. New Zealand. (Took lectures for the course CIVIL-211(Structures and design-1), tutorials, prepare the class test and final exam. Marking the class test and final exams. Canvas maintenance with office hours and answering questions onto piazza.

July 2016 to Nov 2016	Worked as a Teaching Assistant (TA) for CIVIL-211 (Structures and design-1), Taking tutorials, preparing class test and final exam. Marking final exam.
July 2016 to Sep 2016	Worked as a Teaching Assistant (TA) at University of Auckland for CIVIL-743 (Building informational modelling), Taking tutorials, preparing class test and final exam. Marking final exam. This course includes construction management, quantity survey, estimate, tendering etc.
Sep 2016 & Aug 2017	Worked as a Teaching Assistant (TA) for Structures day (one-day lab activities) at the department of civil and environmental engineering-2016 & 2017.
January 2017 till date	Working in collaboration with Curtin's university, Malaysia , in a research project entitled: Behaviour of built-up cold-formed steel columns.
Jan 2015 to Dec 2015	Worked as an Assistant professor for 1 year in the department of civil engineer at Asansol Engineering College, Asansol, West Bengal, India.
May 2014 to June 2014	Project Associate in the project –Earthquake Hazard and Risk assessment for Indian subcontinent (seismic slope stability) sponsored by Norway Embassy, Norway.
July 2014 to Dec 2014	Geotechnical Engineer in “ Geodata Engineering S.P.A ”. Involved in Geotechnical tunnel designing, estimation and quantity survey.
July 2012 to June 2014	Teaching Assistant, Indian Institute of Technology Roorkee, India.
Jan 2014 to June 2014	Part Time Teaching in Graphic Era Hill University as a visiting faculty (Subject taught-Structural Analysis-1, Construction management and planning).
Aug 2013 to Dec 2013	Part Time Teaching in College of Engineering Roorkee as a visiting faculty . Subject taught-Geotechnical Engineering, Estimate and quantity survey.

List of publications/papers (Research Outputs)

International Journal articles:

1. Ting, T.C.H., Roy, K., Lau, H.H., & Lim, J. B. P., (2017). Effect of screw spacing on behavior of axially loaded back-to-back cold-formed steel built-up channel sections. *Advances in Structural Engineering*. <https://doi.org/10.1177/1369433217719986> (Published)
2. Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Nonlinear behaviour of back-to-back gapped built-up cold-formed steel channel sections under compression. *Journal of constructional steel research*. (Accepted)
3. Krishanu Roy 1, Ali Akhtar , Sagar D. Sachdev , Moses Hsu , James B.P. Lim , Ajit Sarmah , (2017). Development and characterization of novel biochar-mortar composite utilizing waste derived pyrolysis biochar. *International Journal of Scientific Engineering Research*, vol-8, issue-12, 2017, 1912-1919. (Published)
4. Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Effect of thickness on the behaviour of axially loaded back-to-back cold-formed steel built-up channel sections - experimental and numerical investigation. *Structures*. (Under review)
5. Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Nonlinear behavior of axially loaded back-to-back built-up cold-formed steel un-lipped channel sections. *Steel and composite structures*. (Under review)
6. Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Nonlinear behavior and design of axially loaded back-to-back cold-formed stainless steel built-up channel columns. *Advances in Structural Engineering*. (Under review)

- Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Improved design rules for axially loaded cold-formed steel channel columns under local-overall buckling interactions. *Steel and composite structures*. (To be submitted soon)

International Conferences:

- Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Experimental investigation on behaviour of axially loaded back-to-back cold-formed steel built-up channel sections. **4th International Conference on Advanced Steel Structures, Singapore. November 09-10, 2017. (Published)**
- Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2017). Nonlinear behaviour of back-to-back built-up cold-formed steel channel columns under compression - finite element modelling and parametric study. **4th International Conference on Advanced Steel Structures, Singapore. November 09-10, 2017. (Published)**
- Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2018). Effect of thickness on the behaviour of axially loaded back-to-back cold-formed steel built-up channel sections. **12th international conference on 'Advances in Steel-Concrete Composite Structures' - ASCCS 2018, Valencia, Spain. (Accepted)**
- Roy, K., Lim, J. B. P., Clifton, G. C. & Mahendran, M., (2018). Finite element analysis of crest-fixed corrugated cold-formed steel roof claddings under wind uplift. ***The Eighth International Conference on Engineering Failure Analysis 2018*. - ICEFA2018, Budapest, Hungary, 8-11 July. (Accepted)**
- Roy, K., Ting, T.C.H., Lau, H.H., & Lim, J. B. P., (2018). Behaviour and failure mechanism of axially loaded back-to-back cold-formed steel built-up columns undergoing local-overall buckling interactions. ***The Eighth International Conference on Engineering Failure Analysis 2018*. - ICEFA2018, Budapest, Hungary, 8-11 July. (Accepted)**