

# **STATEMENT OF PURPOSE**

Skyrocketing buildings, bridges that seemed to go on infinitely, and huge structures supporting the weight of civilization – these were the visions that filled me with awe as a child and amaze me even today; which led me to pursue a B. Tech degree in the field of Civil Engineering.

After three years of my undergraduate course, I feel completely satisfied with my decision to choose civil engineering as my career option. My enthusiasm coupled with scope for innovations and opportunities available particularly in the field of structural engineering has motivated me to opt for higher studies in this field. My passion started early on as I was engaged in gaining practical experience by working on my own civil-related projects on AutoCAD. The initial push and inspiration was fueled by my uncle, who is also a civil engineer. Thus, I joined the Bachelor of Technology program at Delhi Technological University, one of the premier institutes in India, to realize my dream of contributing in building a better future and world class infrastructure for my country.

My first exposure to structural engineering was through the courses Engineering Mechanics and Mechanics of Solids. These inculcated in me the fundamentals of structural behavior which ignited my interest in this field. To strengthen my concepts I pursued advanced structural analysis courses which helped me perform elastic analyses of structures using flexibility and stiffness approaches. Design courses like Design of RCC Structures and Design of Steel Structures equipped me with adequate tools to carry out Multiple Load Resistant Factor Design and also introduced me to various codal provisions. Laboratory courses helped me consolidate my fundamentals and reinforce my theoretical background.

During the course I was introduced to the wonders of Soil Mechanics and Geotechnical Engineering, which gave me a sound grasp of fundamentals foundation design. Eager to supplement my classroom knowledge, I visited several construction sites and closely observed the on-ground procedures. Elective courses like “Geotechnical Processes” introduced me to different methods of soil improvement techniques for various types of soils and really boosted my interest.

According to me, I have always embraced my college courses with the attitude that beyond being well versed with course knowledge, I needed to study subjects to a depth that would allow me to use that knowledge in practical situations. For this reason, with my interest in Structures I took up the field of Structural Dynamics in greater depth, beyond the scope of my B. Tech degree as it is incredibly relevant to my sphere of interest and also engaged in various practical work experiences.

In summer 2017, I did an internship at Delhi Jal Board, Dwarka where I investigated the pumping station at both sewage & water treatment plants. I undertook quality control tests for total alkalinity, total hardness, chlorides, turbidity, dissolved oxygen, PAC and alum, oxygen absorption, and pH. During the training period, I even learned to perform the design, construction & operation of R.C.C overhead tank, and building construction by closely interacting with engineers who helped materialize my knowledge into real usable structures.

In summer 2018, I did an internship at Delhi Metro Rail Corporation in the extension of Blue Line from Noida City Centre to Noida Sector 62 on DMRC Project CC-129, from June to July. At the site, I observed and learned the construction of Pile, Pile Cap, and Bar Bending Schedule and also visited casting yards and performed a study on the testing of materials used for mix design and RCC design; additionally, I also had the opportunity to learn about Surveying. I was among the

very few students to correctly perform industrial testing to the rigorous standards as I personally performed several tests on polymer (used as soil stabilizing agent) like pH, Density, Viscosity. The tests for Concrete were the Slump test, Compressive strength test, and Water Permeability test. The major take-away from this was the opportunity to interact with the Engineers and get on-field experience at an active site.

In my seventh semester, my team and I worked on “FRAGILITY AND RELIABILITY ANALYSIS OF MULTI-STOREY BUILDING”, under the guidance of Mr. G.P. Awadhiya, as our B.Tech Project. Our main objectives were to analyze the structure for seismic performance and to construct fragility curves for a particular type of RCC building. In our project, we first studied the Hasofer and Lind’s method, through which we calculated the Reliability Index of the structural element to ultimately calculate the risk of the structure. We used SAP2000 and ETABS for the analyses. We performed a pushover analysis to estimate the strength and drift capacity of the existing structure as well as building performance level. After that, we calculated Peak Ground Acceleration, then the probability of exceedance of building performance level, and finally plotted Fragility curve of Multi-storey building.

Apart from academics, I partook in several extracurricular activities that complement my academic interests. As a Senior Member of the Society for Civil and Environmental Engineers, I handled Logistics for the official Tech Fest 2017 with a 50-member team. Being the organizer of the Hydraulic-Bridge building competition exposed me to the practical difficulties encountered during projects which boosted my understanding of the subject. Being a science enthusiast, I also regularly participated in various sky watch events, astronomy quizzes and worked as a member of the publicity team for DTU’s Astronomy Club, Zenith. Towards developing my soft skills, I have also worked as a Hostel Representative, dealing with the grievances of my fellow hostellers and ensuring the well-being of all residents.

During my final year, I was delighted to get recruited as a site engineer for DSI-BRIDGECON as a part of on-campus recruitment. During my entire job period of about eight months, I got assigned to be a part of the project of Extension of Barapullah Elevated Road across river Yamuna (Phase - III) from Sarai Kale Khan to Mayur Vihar. My responsibilities included Post – tensioning & grouting work for segments, Stressing of Stay Cable, and Calibration of Con-Ten Jack.

I am optimistic and hardworking and strongly believe in maintaining ethical integrity in all my endeavors and wish to spread positivity through my actions armed by my knowledge and skills.

The undergraduate curriculum enabled me to clear my fundamentals, which made me feel the need to complete my master’s degree. I also wish to carry out interdisciplinary research on “Structural Engineering”. I want to learn from the highly experienced faculty at IIT Kharagpur to build a career in structural design. After completing the graduate program, I wish to return to my country and establish a consultancy so that the engineering students of Nepal can learn several structural designs and work on developing the infrastructure of the country. As the whole length of Nepal, from east to west, lies in an active shallow earthquake belt, due to the lack of structural engineers in our country, most of the structures are insufficient in resisting high magnitude earthquakes. On 25<sup>th</sup> April 2015, earthquake in Nepal killed nearly 10,000 people and several were injured. Due to a lack of Structural Designers and skilled laborers, none of the multi-national companies want to build infrastructures in Nepal. So, after completing my studies, I wish to return back to Nepal and turn around this scenario as a competent and technically sound civil consultant.