

# SANJAY KUMAR P.E., P.Eng.

## Principal Structural Engineer

(850) 750-0606 | ksanjaykumar@hotmail.com | <https://www.sanjaykumar.ca/> | 5010 Mancuso Lane, Apt 719, Baton Rouge, LA

### Summary

- **Master graduate in structural engineering with 10+ years** of experience in analysis, assessment and detailed design of **steel structures, reinforced concrete structures and their foundations** within the **mining and minerals, batteries, LNG, onshore oil & gas, heavy industrial and petrochemical sectors** by **American, Canadian Codes and Euro Standards**.
- Registered as **Professional Engineer P.E. (License# 152735)** with the **Texas Board of Professional Engineers and Land Surveyors TBPESL** with **NCEES Records for multi-state comity licensure**.
- Registered as **Professional Engineer P.Eng. (License# 100552676)** with **Professional Engineers Ontario PEO**.
- **Employer sponsorship is not required** to work in the US. I hold Canadian citizenship and eligible for TN status.
- **Lead Engineer** in L&T for the WKO Facility (Kuwait Oil Corporation) project and responsible for planning, scheduling and delivering the targets within the allocated project budget for the ISBL area in 8 GC's containing 16 technological structures, 24 piperacks, 32 steel shelters, 176 equipment foundations and 8 reinforced concrete substation buildings.
- **Expert developer of VBA automation** with a keen insight into structural engineering concepts to reduce the overall project costs. **(Click to see)**
- Managed sub-contracts independently and acted as the **area lead engineer**.
- I have extensive knowledge of building codes and standards such as **ACI 318, AISC 360, ACI 351.3R, PIP, ASCE 7, IBC, AASHTO, CSA A23.3, CSA S16, NBCC, OBC, and Euro Codes**.
- Computer Skills/Design Software: **STAAD Pro, Dyna6, SAP2000, RISA 3D, Mathcad, AutoCAD, Bluebeam, Navis Works Simulate, OpenSTAAD libraries, Excel VBA, LISP, and Microsoft office products**.

### Work Experience

**Job Title** : **Principal Structural Engineer**

**July 2024 – Present**

**Employer** : **Worley, Baton Rouge, Louisiana**

- **Analysis and design of the regen gas compressor (>9000 RPM) and hot oil pump dynamic foundations** using **Dyna6** conforming to **ACI 351.3R & ACI 318**. Provided **sensitivity** studies and the **variance of pile stiffness** with machine frequency to highlight the importance of using Dyna6 over traditional analysis software.
- I **reviewed the pile and foundation drawings** of the modules and equipment within the PTS area.
- I evaluated and applied the dead loads, live loads, equipment loads, wind loads, and snow loads for the CM and LM module racks as per the project specifications. I then re-evaluated the racks for the new tie-in loads.
- Mitigated the impact on the structural drawings issued to the fabricator by coordinating with the stress and piping teams. **Connection designs** were verified using **RAM connection**.
- I also developed sketches for the footing designs, pier designs, anchor bolts, steel framing, and other structural details for the designer to prepare the 3D model and necessary construction drawings.

#### Projects:

- VG CP2 Project, VG, Louisiana.

**Job Title : Intermediate Structural Engineer**

**Mar 2023 – July 2024**

**Employer : Worley, Markham, Canada**

- Analysis and design of the **P7A G1+G2 building** of size 62x25x28 m, **utility building** of size 65x15x28 m, **NMC scrap building** and their **foundations** conforming to CSA S16, CSA A23.3, NBCC and OBC.
- A constructability review was performed for the above buildings and sequential erection and design proposals were proposed to the client.
- **Developed the load combinations**, conforming to NBCC, OBC and PIP standards for the **PACMAN project**.
- Vendor GAD reviews and coordinate packages (sub-contractors) with other disciplines and vendors to manage the flow of data for designs.
- **Vendor GAD review, coordinate packages (sub-contractors) with other disciplines** and vendors to manage the data flow for designs.

*Projects:*

- PACMAN Project, Umicore, Ontario, Canada.

**Job Title : Structural Engineer**

**Nov 2020 – Mar 2023**

**Employer : WOOD Canada Ltd., Oakville, Canada**

- Analysis and design of the **Screening Building, Primary Crusher Building** and their **foundations** conforming to CSA S16, CSA A23.3, NBCC, and OBC.
- **Finite element modelling**, analysis, and design of **dynamic foundations** of pumps in-accordance with latest CSA and ACI standards.
- **Package Engineer** for the **precast concrete supply** contract in the Côté Gold project and the **multi-plate tunnels** in the Marathon project.
- **Responsible** for the structural drawings **submitted by the sub-contractor (Scott Steel)**. Reviewed and provided **approvals** for their design and drawing submittals.
- **Reviewed** the 3D models submitted by the fabricator and provided **approvals for the steel fabrication model**.
- Provided prompt **RFI responses to the precast supplier, Scott Steel, and the steel fabricator (Walters)** to avoid construction delays.
- Assisted the Lead Engineer in **preparing the TDR (Technical Decision Record) and ECN (Engineering Change Notice)** for the hot and cold storage building layouts.
- Prepared the MTO **material take-off** for the feasibility study of Marathon project.
- Prepared the **calculations sheets** to verify the **development length** as per CSA A23.3, **ladder and handrail standard drawings** as per NBCC, OBC and OSHA standards.
- Prepared the **load combinations**, conforming to NBCC and OBC standards for the Marathon project.
- Provided **engineering technical support to the site during construction**, and responded to RFIs from construction contractors and suppliers.
- **Vendor GAD review, coordinate packages (sub-contractors) with other disciplines** and vendors, to manage the data flow.

*Projects:*

- Côté Gold Project, IAMGOLD, Ontario, Canada.
- Marathon Palladium and Copper Project, Generation PGM, Ontario, Canada.

**Job Title : Civil & Structural Engineer**

**Oct 2019 – Mar 2020**

**Employer : Saipem, India**

- Analysis and design of **structural steel modular piperacks** and **technological structures** and their **pile foundations**, conforming to American Standards.
- **Finite element modelling**, analysis and design of **cooling tower basin sumps** and **dynamic pump/compressor foundations** in accordance with ACI 318.
- **Developed VBA Excel sheets** for streamlining the design process of **miscellaneous pipesupports** and their **foundations**, leading to **40% reduction in man-hours**.
- Initiated, prepared and issued the **calculations & design drawing packages** for the above engineering deliverables.
- **Supervised** the calculation, technical reports and drawings issued by **subordinates**.
- Collaborated with the Milan Operating Centre of SAIPEM and EPC contractors to approve design documentations and drawings, while sticking with the budget and committed schedules.
- **Developed VBA macro tools** to extract the **foundation summary data** from **MAT-3D** for reporting, BOQ estimation and providing draftsmen input data. It directly resulted in a **70% saving in manhours**.
- **Generated a VBA macro tool** to create **sketches of pedestal rebar** for draftsmen input and extended the sheet to determine the number of pedestal rebars contributing to anchor bolt tension. **AutoCAD license consumption for the above activity was brought down to zero**, simultaneously efficiently enabling multiple iterations.
- Developed Windows scripts using sendkeys method to **create structured project folders in Windows**.

*Projects:*

- Clean Fuel Project, Thai Oil, Thailand.

**Job Title : Assistant Manager Civil & Structural**

**July 2017 - Aug 2019**

**Employer : L&T Hydrocarbon Engineering, India**

- **Area Lead Engineer** of the Kuwait Oil Corporation project within WKO facilities.
- Handled the ISBL area in 8 gathering centres, containing 16 technological structures, 24 piperacks, 32 steel shelters, 176 equipment foundations and 8 RCC substation buildings.
- **Seismic Analysis and design of RCC substation** in a high seismic zone adhering to **ductile detailing** along with the **preparation of BBS** as per ACI 318.
- Analysis and design of **Transformer foundations** and **dynamic equipment foundations** for compressors.
- Review and quality compliance of **fabricator shop** and **BBS drawings** for the above structures.
- Provided engineering **technical support to the site during construction**, including **site inspections**, responded to RFIs from construction contractors and issued Design Change Notes.
- **Participated** in 30%, 60% and 90% **model design reviews** with Client, JV and contractors.
- Prepared the **civil & structural design basis**, conforming to ASCE 7 and Kuwait Oil Corporation standards.
- Analysis and design of **shelters, piperacks & pipe supports** conforming to AISC 360.
- **Finite element modelling**, analysis and design of **raft foundations** of technological structure, in-accordance with ACI 318.
- **Estimated** the number of **piles** based on initial pile capacities to arrive at a **±10% BOM** for the pile project cost estimates, **tender quotes** and other **contractual documents**.

- **Estimated the manhours** for new project bids and undertook **feasibility studies** during bidding to **identify the constructability issues** during **site surveys and inspections**.
- **Developed a tool for extracting member end forces from STAAD** to perform **connection designs** through **VBA and OpenSTAAD**. It saved a considerable amount of man-hours while performing multiple analyses, and the automation was implemented later across multiple projects in the department.
- **Implementation of an AutoCAD LISP tool**, to change the template of multiple drawings simultaneously, directly resulting in a **30% reduction in drafting manhours** for the activity.
- **Deployment of VBA macro tool**, using AutoCAD LISP **to estimate grading and filling quantities**.
- Performed manual calculations for validation of MAT-3D and RCDC softwares.
- **Data mining of foundation failure patterns** and material take-off **using VBA** to arrive at **economical and safe designs**, ensuring proper functionality and practicality.
- Awarded the **“Outstanding”** performance ratings for two continuous years at L&T.

*Projects:*

- WKO Facilities Revamp Project, Kuwait Oil Corporation (KOC), Kuwait.
- 100 kTPA Chloromethane Project, Gujarat Alkalies Company Ltd, India.
- Ramanmandi Barwala Project, Hindustan Petroleum Corporation Ltd, India.

**Job Title : Civil & Structural Engineer**

**July 2015 - July 2017**

**Employer : Amec Foster Wheeler (A Wood PLC), India**

- **Adequacy check** of existing EO reactor **structure and pile foundations** conforming to Eurocodes.
- Analysis of **raft foundations with piles** through **FEM modelling**.
- **Developed built-in VBA functions** using OpenSTAAD for effective modelling in STAAD.
- Provided minimal strengthening for piperack during **adequacy checks of brownfield projects** and **prepared drawings** indicating the **modifications for foundations**.
- Analysis and design of **miscellaneous pipe support** in **offshore deck platforms**.
- Developed **wind loading sheets** for **offshore structures** based on American standards.
- Prepared **connection design calculation sheets** conforming to American codes.

*Projects:*

- Vacuum Gas Oil Project, PREEM AB, Lysekil Refinery, Sweden.
- EOG2 RUBY FEED Project, Shell Eastern Petroleum Pte.Ltd, Jurong Island, Singapore.
- BLNG COGEN II Project, Steam Integration EPCm, Lumut, Brunei.
- Montrose Arbroath Redevelopment Project, Talisman Energy Limited, UK (North Sea).

## Education

*(Evaluated as equivalent Canadian Bachelors and Masters Degree by WES)*

*(Evaluated as equivalent US Bachelors and Masters Degree by NCEES and WES)*

**MASTERS IN STRUCTURAL ENGINEERING**

2013-2015

Indian Institute of Technology Madras, India

**BACHELORS IN CIVIL ENGINEERING**

2008-2012

College of Engineering Guindy, India