CAREER EPISODE 3

INTRODUCTION

CE 3.1 This career episode covers my project in “DELUXE PALM” PHASE 2 Aurangabad, Maharashtra, India. This project started on 9th Dec 2019 and is ongoing. Structen Engineers and Contractors is responsible for this project and I am working as a Senior Civil Engineer on this project. Mr. Syed Azhar Ali is the CEO of Structen and is the project director. Structen Engineers and Contractors has undertaken several construction projects locally and internationally. The company is also known for overseeing and designing construction projects works in India and also for international clients in the America, UK and Gulf States.

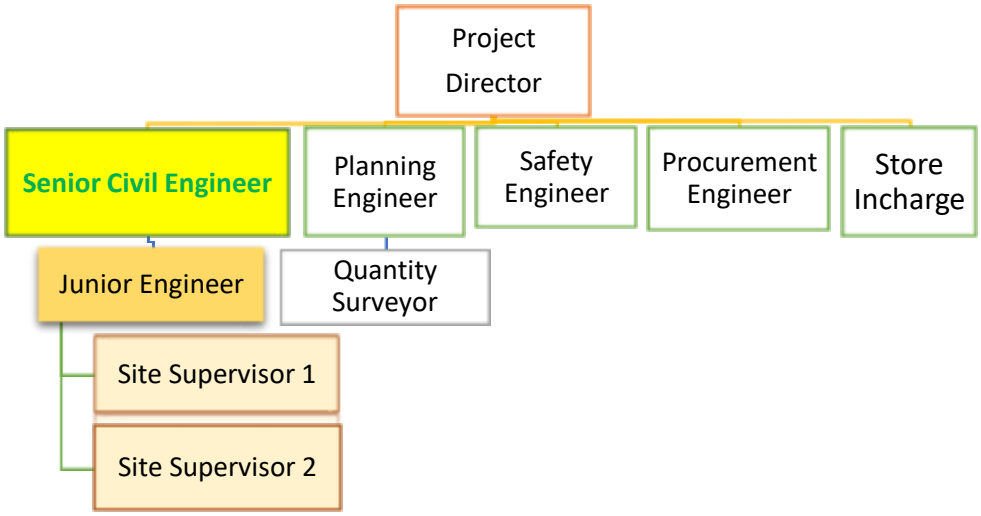
BACKGROUND

CE 3.2 Phase 2 of the project consists of { Apartment[G+5 storied]} + 10 (3BHK), 10 (2BHK) Row Houses. The associated landscaping and within the complex roads would also be completed as part of the project. Also planned are utilities and accessories like clinics, schools and shopping marts at convenient location from the project premises.

CE 3.3 This project is planned for making top class facilities and amenities accessible in affordable housing scheme. From earlier successes of phase I, all is on track to ensure similar successes. This project is aimed to meet the long public call for the construction of residential buildings with top notch quality and full range of facilities.

CE 3.4 The company is fully commited to certifying quality, managing cost control and ensuring client satisfaction as were the cornerstones for its phase I project. Structen Engineers employs professionals with strong engineering credentials and utilizes latest technology and software for delivering its projects.

CE 3.5 I am reporting to the CEO, and I have a team of supervisors, junior engineer sand labours reporting to me, as shown below.



CE 3.6 My responsibilities include the following activities:

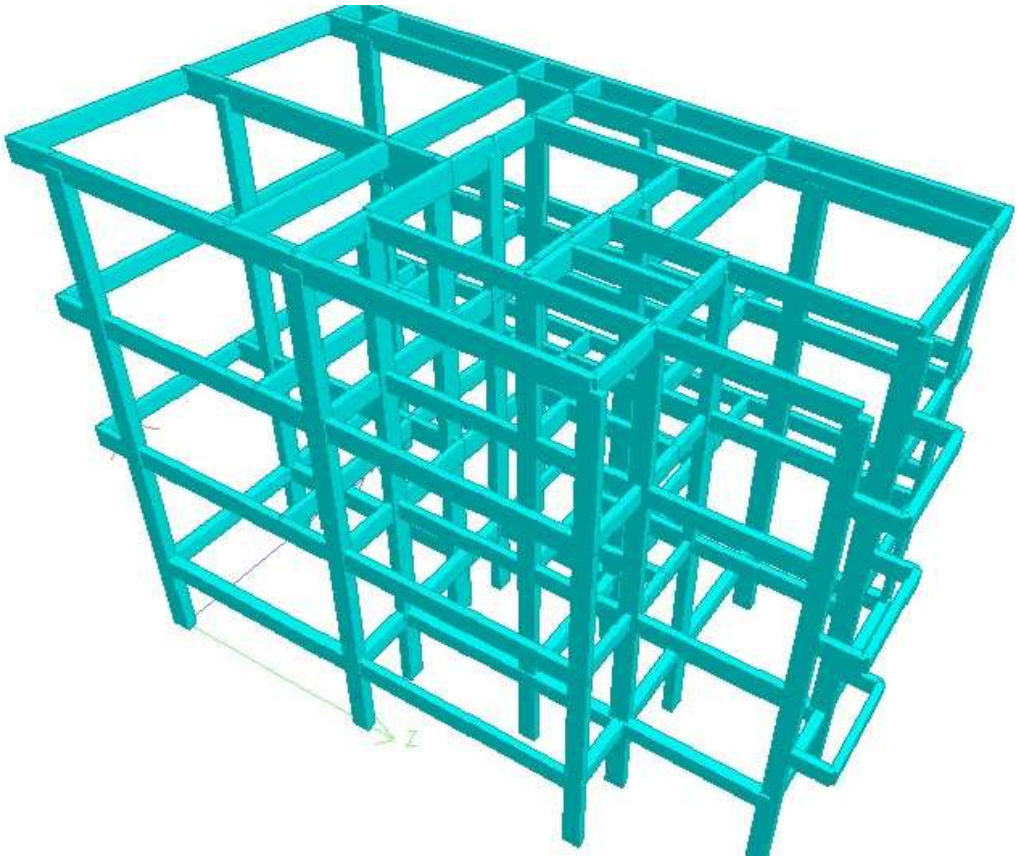
- Preparation of work planning schedule, Analysing and carrying out detailed study of structures and material requisition
- Forging design calculation for footings, columns, beams and slabs
- Designing the building and analysing it using STAAD.PRO software
- Interpreting, reviewing and approving survey work
- Ensuring that the construction plans meet guidelines and specifications of building codes and regulatory requirements
- Testing soils and materials to determine the adequacy and strength of foundations and concrete
- Plan and prepare construction milestones and schedules and monitor progress against established schedules using Primavera P6 alongside PE
- Preparing progress reports and issue progress schedules to the project director as well as to the client
- Supervision of whole site and critically solving an unexpected problem on site
- Supervising the activities of subordinate staff and attending weekly review meeting with project director and other team members including Junior engineer and site supervisors

PROFESSIONAL ENGINEERING ACTIVITY

CE 3.7 I was responsible for the complete onsite delivery of project. I prepared work planning schedules, ensured that design and calculations were done according to specifications as well as analysing all the static and dynamic loads for structural systems, made timely material requisitions, managed cost control and documented all work.

CE 3.8 I used project management tools like primavera P6 to manage construction scheduling, monitoring progress, directing staff as per the project resource requirements and analysing the progress against Gantt chart alongside planning engineer. I provided regular reports of progress to the project director. I worked on advanced scheduling with project planning for monthly basis and assigned work to my junior staff for execution.

CE 3.9 I assembled the construction site(apartment and row houses) using multiple designable elements such as footings, columns, slabs, transfer beams. Using STAAD.PRO software I could create a detailed structural design. This 3D model allowed me to simulate live loads, do Concrete floor system Analysis and build different options for composite concrete/steel beam design. This included measuring and uploading their span, dimensions, and loading these parameters into the program which allowed me to come up with models that were accurate, practical, and flexible enough to incorporate design changes in the future seamlessly.



CE 3.10 I interacted with clients and held regular discussions and meetings with project director to discuss ongoing issues related to fire resistance and durabilty of the reinforecement cover, on re-assesing the design. Nonetheless, I modified the design which was relatively easy as individual models were needed to be

changed satisfying all the necessary inputs from client, simultaneously ensuring that the calculations and drawings are easily legible to others. At times the problem required adjustment in the design and timeline and I would after agreeing with my team adjust project schedule to accommodate design solutions.

KANKHADE - Beam End Forces:

All | Summary | Envelope

Beam	L/C	Node	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
1	3 1.5	1	526.722	11.063	7.310	0.116	-5.320	7.23
		19	-520.544	-11.063	-7.310	-0.116	-9.300	14.89
2	3 1.5	2	941.000	-7.223	5.775	-0.053	-3.129	-6.16
		20	-934.822	7.223	-5.775	0.053	-8.422	-8.27
3	3 1.5	3	840.242	5.964	-6.437	-0.099	3.514	2.44
		21	-834.064	-5.964	6.437	0.099	9.361	9.48
4	3 1.5	4	884.548	-7.073	-1.020	0.009	0.863	-5.83
		22	-879.777	7.073	1.020	-0.009	1.177	-8.31
5	3 1.5	5	673.901	0.774	-7.436	0.069	5.628	2.54
		23	-666.585	-0.774	7.436	-0.069	9.245	-0.99

KANKHADE - Beam Force Detail:

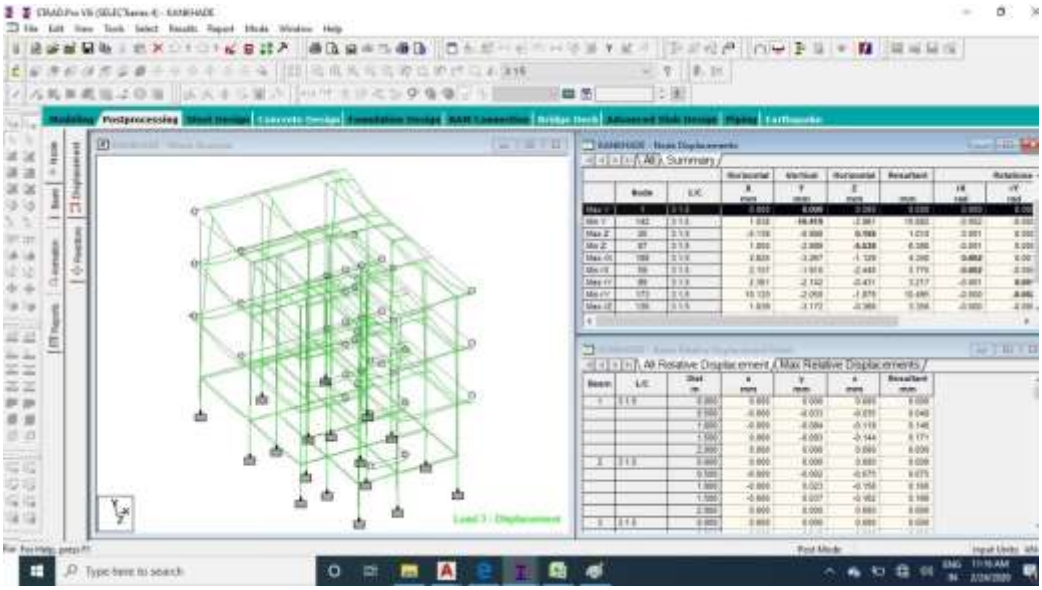
All | Max Axial Forces | Max Bending Moments | Max Shear Forces

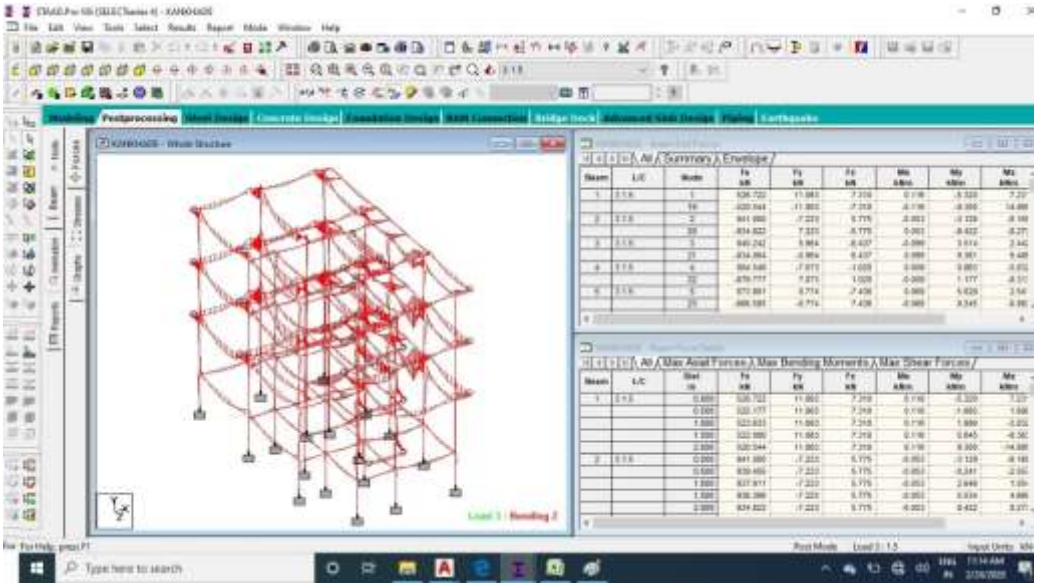
Beam	L/C	Dist m	Fx kN	Fy kN	Fz kN	Mx kNm	My kNm	Mz kNm
1	3 1.5	0.000	526.722	11.063	7.310	0.116	-5.320	7.23
		0.500	525.177	11.063	7.310	0.116	-1.665	1.69
		1.000	523.633	11.063	7.310	0.116	1.990	-3.83
		1.500	522.088	11.063	7.310	0.116	5.645	-9.36
		2.000	520.544	11.063	7.310	0.116	9.300	-14.89
2	3 1.5	0.000	941.000	-7.223	5.775	-0.053	-3.129	-6.16
		0.500	939.455	-7.223	5.775	-0.053	-0.241	-2.55
		1.000	937.911	-7.223	5.775	-0.053	2.646	1.05
		1.500	936.366	-7.223	5.775	-0.053	5.534	4.66
		2.000	934.822	-7.223	5.775	-0.053	8.422	8.27

CE 3.11 I have tested soil blending and ensured compacting of soil as per the lab results so that the foundations effectively distributed the load of the structure and had effective safety against soil movements and strength of foundations is not compromised.

CE 3.12 I used Primavera P6 for planning, monitoring and reporting activities. Primavera helped me for the top level planning and provided drill down for initricate details. Primavera allowed tracking of the project and allowed me to use baselines to know if there was any deviation in the project duration during execution which I examine in contrast with planning engineer's trackings of activities to verify the progress of work running smoothly or not. Primavera easily allowed me to compare between the planned work and actual progress of construction project.

CE 3.13 The client was uneasy that the deflection of the beam and slab of ground floor under all loads considering the effects of temperature, creep and shrinkage would be disastrous for the building. I discussed the same with client demonstrating the STAAD.PRO models on my computer and showed them the current deflection is permissible.





CE 3.14 I analyzed reports, maps, drawings and the geological data to incorporate climactic conditions effect in construction and I interpreted, reviewed and approved civil design work to ensure they do not collapse, vibrate, twist and bend in undesirable ways.

CE 3.15 I planned and prepared construction milestones and schedules and monitored progress against established schedules from my side irrespective of planning engineer to rectify the timeframe and work progress. I had ensured availability of modern and heavy duty machinery and equipment in sufficient quantity, so that tasks are done timely without delay.

CE 3.16 I managed my construction equipment, ensured availability of excavators for digging pits and trenches and loader for transferring dug up soil off the site. Similarly loaders and mixers were allocated to respective sites so delay in

transportation could be managed. I used flatbed trailer for transporating steel bars and grader for levelling surface.

CE 3.17 I had devised truck calculation program from previous experience and success of Phase1 that provided the required number of trucks required on site. The program required parameters of road conditions, traffic density, capacity available, loading/unloading timings and used these inputs to optimize number of trucks required for efficient plying of material.

CE 3.18 I learned on the job from my project director and I used internet and information from construction suppliers to get knowledge about new materials and techniques. This knowledge helped me devise innovative engineering solutions to construction problems. Innovative solutions were more cost effective and saved costly delays.

CE 3.19 I supervised the activities of junior engineer, subordinate staff, technicians, and site supervisors and reviewed and approved designs, calculations and cost estimates. I assured maximum productivity from each construction site by levelling resources and ensuring efficient utilization of the construction material.

CE 3.20 I got daily feedback from my subordinate staff, so I could generate reports and could guide my field staff on resolving day to day issues. I had provided my staff with sufficient knowledge to resolve small problems and discuss with me any major issues so work was not delayed because of pending decisions.

CE 3.21 I followed the district Municipal Corporation statuatory construction codes and guidleines and the New National Building Code of India. Following the required by-laws allowed the project to get through regulatory approvals without any delays.

CE 3.22 I ensured safety engineer regularly briefed the supervisors on safety requirements. If required safety engineer was called upon to brief the labour so no undue problem arose. In turn the labourers and subcontractors' were clearly told about getting go ahead from supervisor and junior engineer on site so that all work were according to project plan and deviations were minimized.

CE 3.23 I maintained the design component and used STAAD.PRO for doing relevant calculations. Each element's design had a corresponding output in the software. I had added design concepts and philosophies used in the project and provided a clear outline of the content pages.

CE 3.24 STTAD.PRO allowed me to consider various design possibilities for the building I was responsible for. Apart from making and modifying designs, I was

always involved with planning health and safety considerations during and after the construction work, obtain appropriate approvals, and communicate them effectively to various stakeholders.

CE 3.25 I met with my team daily but interacted with senior team twice weekly where we had a meeting discussing on targets achieved, the status of the upcoming works, remaining regulatory NOC's and resources allocation. I regularly analysed the resource allocation sheets and made any changes if required.

CE 3.26 I was managing a junior engineer and had two supervisors while and in turn they were managing the whole labour force. I regularly interacted with my staff and labour and was spending around half of the work time with them. This allowed me to earn their respect and get them to work diligently.

CE 3.27 I used Primavera tool and excel charts to track completion percentage of the project. I prepared cost report for analyzing the transfer costs and internal cost allocations. I also tracked the cost breakdown of each element to understand the exact costs attributed to the company for work completion. These costs were utilized for internal cost management and estimates were used for costing the future projects as well.

CE 3.28 There have been several instances where I have been able to provide novel and cost effective solution. I have been able to do this because I had regularly interacted with suppliers, project director and reseach for alternate solutions on Internet. Since I used STAAD.PRO, it was comparatively easy to modify design like once the safety engineer highlighted an issue with fire resistance and I could easily modify the design to incorporate additional safety.

CE 3.29 I am working as the Senior Civil Engineer so I am involved in day to day problem resolution. I have used new and novel techniques of design modelling using STAAD.PRO software. This design modelling helped in easily modifying structural design to model additions and modifications to the infrastructure.

SUMMARY

CE 3.30 This career summary covers my project in Deluxe Palm, phase II. I worked as a senior civil engineer and was responsible for complete project management. I used STAAD.PRO software for simulating the structural design. This software allowed me to simulate live loads and test out various combinations before finalizing on one option. I was able to simulate solution to problems on the software saving significant cost and time.