

COMPANY

**Satish Jain Consulting Engineers
Pvt. Ltd.
(SJC Group)**

LOCATION

Mumbai, India

SOFTWARE

**Autodesk®Revit®
Autodesk®AutoCad®**

Construction Documents & Revit Structure - An Approach to Buildability

Satish Jain Consulting Engineers Pvt. Ltd.
delivers Halcyon Hotel and Fairmont Carif
buildings on Revit

We are pressing hard on 'Integrated Project Delivery' which is the way forward for any big project and was the strongest reason for Revit adoption. The BIM suite of products from Autodesk helped us with the whole idea of pre-construction management where we virtually "build a building before it gets built" to almost eliminating Request for Information during construction. BIM Solution from Autodesk plays a strong connecting role between all the stake holders of our projects.

—**Mr. Satish Jain**
Director
SJC

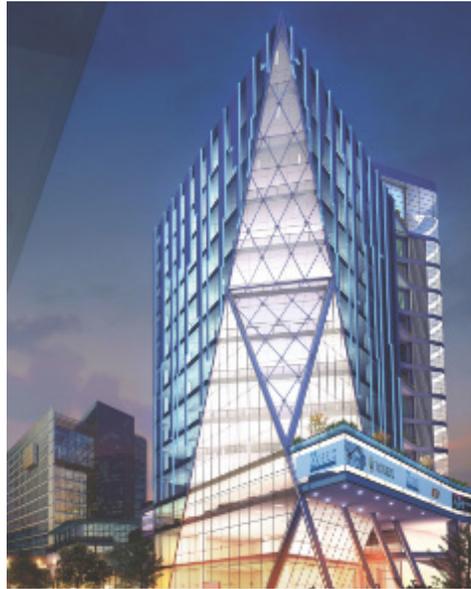


Image courtesy of SJC

Autodesk Building Software helps SJC Group complete projects with a tight schedule, win repeat orders.

SJC is a structural engineering consultancy specializing in tall buildings, hospitality, commercial, industrial, township and mixed use projects.

SJC's services include Structural Analysis & Design, Building Information Modelling, Integrated Project Delivery, Advanced Earthquake Engineering, Peer Review, Value Engineering, Site Inspection, Training, Construction related Project Management Services and Research & Development.

SJC group is also involved in design, manufacturing, supply, inspection and installation of un-bonded post tensioned slabs and beams for building structures.

Founded in 2009 with its headquarter in Mumbai, SJC is a strongly knit 30 member team consisting of highly skilled and self-motivated engineers, Revit and AutoCAD designers and field technicians.

The team is driven by the core value of delivering



not only Quality Engineering but also Buildable/ Constructible solutions. SJC believes in providing efficient structural concepts that are not only architecturally appealing but also offer robust and economical structural systems.

SJC have standardized on Revit not out of compulsion or competition but due to their foresight and vision of the AEC industry, especially BIM, much ahead of anyone else in India.

Director, Mr. Satish Jain who has a Masters in Structural Engineering from Iowa State University in the U.S. sensed the latest trends in modern AEC practices and introduced Revit into the company's projects from very early times.

Revit Structure dramatically eased the process of creating beam, column and shearwall elements further utilizing various rebar and post tensioning families helped establish a quick turnaround of highly buildable construction documents for our clients.

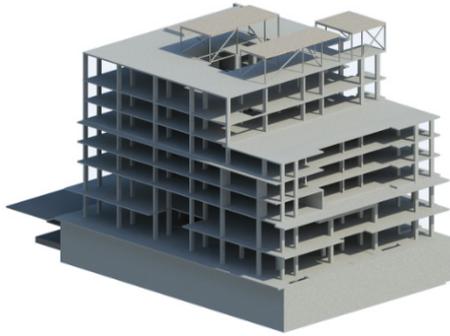


Image courtesy of SJC

Halcyon Hotel:

Category: Hospitality, Mid-Rise
Stories: 10 (2 Basements + 8 Upper levels)
Area: 100,000 Sq. Ft.
Client: Cary Kopczynski & Co,
 WA, USA
Location: Denver, USAi
Status: Under construction

SJC's clients, Cary Kopczynski & Co. Structural Engineers from Bellevue, Washington, USA threw a sharp deadline of 4 weeks for submission of 90% Construction Documents that could be sent for permit to their local authorities.

Challenges

The challenge was not only to do structural design but at the same time prepare the complete construction document in Revit Structure including rebar and post tension cable drawings and details, elevate all columns and shear walls with all reinforcement.

Even challenging fact was that our client also wanted to add on their own information to the Revit model on a daily basis, which meant that daily back and forth of BIM had to be done keeping in mind the different time zones.

The Solution

Video conferences with Revit BIM models every other day in the first week brought in valuable insight into our client's requirements. BIM standards of our clients were imported and implemented.

"At the end of each day, the Revit BIM model and the progress PDF's of all the construction documents were uploaded. Every morning, we would receive updated BIM model from our client, which we would download and start working. Along with the team of BIM designers, structural engineers would check all the drawings for quality control each day." said Mr. Amol Mansute, Sr. CAD Designer, SJC.

"The central idea of process control management system that we adopted led to successful completion of the project in time and also with high quality control. Good team work enabled us to not only complete the work but also get repeat work from our client, thanks to Revit." said Mr. Satish Jain, Director of SJC.

The Result

Revit Structure was the software of choice for end to end construction documents. In a fast paced project like this, creating beam, column and shearwall elements was utmost easy using Revit. Further, utilizing various rebar and post tensioning families helped establish a quick turnaround of construction documents for the client.

Repetitive interactions between third-parties and client and also those between architects and contractors was highly reduced or altogether eliminated.

Halcyon required a large number of detailed sections and plan work thus also increasing the sheet count on the project - something that could have been hugely time consuming in 2D drafting. Revit helped resolve this issue for us not only by cutting time but also costly mistakes.

— Mr. Amol Mansute
 Sr. CAD Designer
 SJC

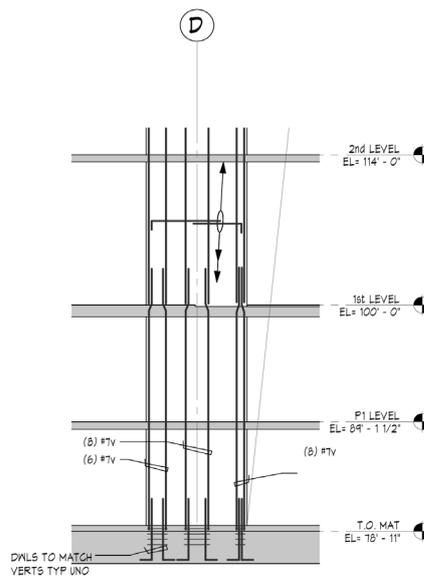


Image courtesy of SJC

Revit Structure greatly helped us and our client with 3D visualization of the project even after receiving the drawings from the architect in 2D format.



Image courtesy of SJC

Fairmont Carif:

Category: Commercial, Mid-Rise
Stories: 17, (2 Basements + Ground + 14 Upper Levels)
Area: 125,000 Sq. Ft
Client: Fairmont Constructions
Location: Western Express Highway, Metro Station, Andheri (East), Mumbai
Status: Under Construction

Carif is an iconic commercial project coming up at the prominent cross roads of Western Express Highway and the Metro Rail Station in Andheri (East), Mumbai.

Challenges

"We were introduced into this project to conceptualize the structure in such a fashion that can offer unmatched space flexibility to the client while economizing the structural cost from what the client had currently assessed." says Mr. Satish Jain.

The major challenge was the changing size of floor plate. Each floor plate is unique combined with an external atrium enclosed by glass façade. This led to sloping external face at one corner of the building. The structural scheme thus had to include sloping concrete columns inside the floor plate as well as a space truss system of sloping structural steel pipe sections. Another challenge was that the Architect was using AutoCAD 2D drawings on a complex project that required 3D visualizations.

The Solution

"We decided to carry out the work by not only modeling in Revit, but to create all the construction documentation in Revit as well, which was a tricky thing in Indian conditions where too many random changes from client and other consultants are order of the day. But we decided to take the risk because we somehow felt that the ultimate rewards and benefits would far outweigh the risks in terms of approaching this complex project.", said Mr. Rahul Ayinikandy, Project Manager, SJC and Company.

The Result

1. A complex geometry project was made easy using Revit Structure.
2. Sloping concrete and steel column systems could easily be located on each floor.
3. Ramp and basement wall elevations could be shown precisely thus eliminating errors.
4. Automatic scaled elevations of beams, columns and shearwalls reduced errors.
5. Added enthusiasm in our document production team as they get to do advanced level of work.
6. Clients are excited about the use of BIM as this is to their advantage.

Carif with a highly complex geometry made it highly difficult to work in 2D. Revit helped us understand the slopes and variations that helped in Conceptualization, Analysis and Final Design.

Automatic rebar schedule generation in Revit reduced significant time and effort on structural construction documents.

— **Mr. Rahul Ayinikandy**
 Project Manager
 SJC

Revit families made it much easier to work on construction documents for an international client.

The whole concept of creating construction documents while putting together the 3D model in itself is highly beneficial for any project.

— **Mr. Atul Gadre**
 Sr. BIM Designer
 SJC