

## COMPANY

**Tecture Structures Pvt. Ltd.**

## LOCATION

**Nagpur, India.**

## SOFTWARE

**Autodesk® Revit®****Autodesk® NavisWorks®**

# Taking BIM to the Next Level

## Tecture delivers NIT Bus Terminal, Nagpur on Autodesk Solutions.

“Utilizing BIM to its full potential and making an impact on the workflow in the construction industry is our foremost target. We work in close collaboration with our clients and believe in forging long term relationships with them.”

—**Dayesh Jaiswal**

Chief Business Development Officer  
Tecture Structures Pvt. Ltd

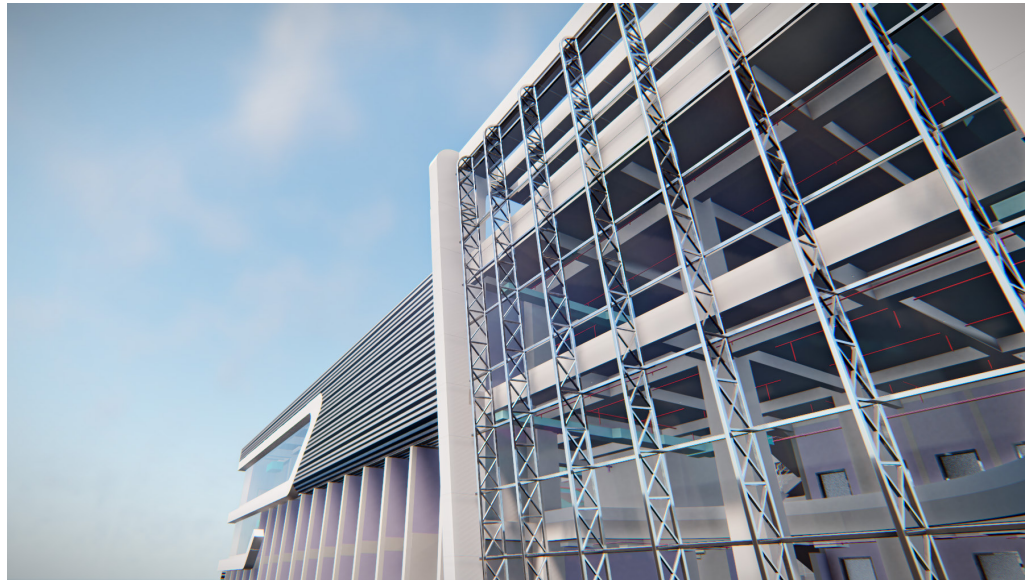


Image courtesy of Tecture Structures Pvt. Ltd

**Tecture Structures Pvt. Ltd is an award-winning Engineering and BIM Consulting firm that offers comprehensive services to clients and communities in a range of markets and regions. The firm's commitment to providing tangible solutions to client and stakeholder needs is at the center of Tecture's design and management approach.**

The firm sees design as a collaborative process that considers and balances vision and mission, functional goals and physical environment, issues and opportunities, and fundamentally resolves and manifests those qualities in the built form. Based in Nagpur, Tecture is made up of 20 optimistic and dedicated individuals who collectively seek to add value to those places and spaces that strengthen communities, businesses, organizations and individuals.

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### Project Summary

NIT Bus Terminal, Nagpur, India is a Public Private Partnership (PPP) project. - A Three Lakh square feet of mixed use development incorporating a

Bus Terminus, a Shopping complex, a Hotel and a Hospital with 2 level basement parking. While it's Ground Floor and First Floor are appropriately earmarked for shops and space for travelers. The upper floors accommodate a state-of-the-art hotel with amenities such as gymnasium, swimming pool, etc. The project acts as a benchmark for smart cities when it comes to developing a bus terminal.

Tecture was involved in performing the Architectural, Structural and MEP modeling for the project. Tecture's role was to ensure least delays and minimum constructability issues on site providing services like Quantity Estimation, Construction Project Tracking and Cost Reconciliation, ensuring optimization both in time and cost, considering the scale of the project.

### The Challenges

As a mixed use development project – NIT Bus Terminal involved different consultants (Architectural, Structural, MEP, Interior, Landscape and others) working on the project. Along with the co-ordination issues, it was challenging to bring consultants' data to 3D from conventional 2D tools which they had used for decades.

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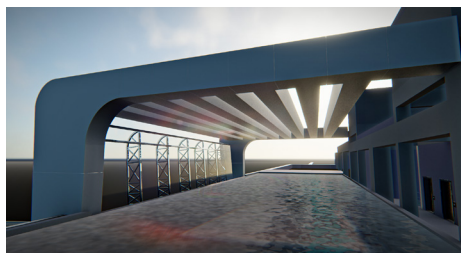


Image courtesy of Tecture Structures Pvt. Ltd

Even though a lot of pre-work had been done in 2D by other design consultants, Tecture management felt that BIM should play a central role in the construction management process for the project. That's because BIM would allow the firm to leverage intelligent 3D models to help to keep the project on track. It was also planned to integrate 4D time schedules to monitor the project status on site. Tecture team thought it was unrealistic to expect all the different consultants to start using BIM tools but wanted to ensure that their existing workflows be augmented by BIM. It was very important to have a tool that could bring everyone's work together into a single, complete model for clash detection, reporting and other critical work.

"It was very important to describe every entity of the project on a common platform accessible to all stakeholders to gain the advantage of communicating with partners without ambiguity and additional semantics," explains Arnav Jain, COO, Tecture Structures Pvt. Ltd.

One of the features that stands out in the project is a roof-top infinity pool which presented some real challenges during construction. The water from the pool was designed to fall over the front glass façade of the building and collected on a base tank located 3 floors below. Further it had to be pumped back to the top floor through a plant room. Hence, the structural details of the pool were required to be coordinated with the façade features, the structural steel system, its filtration unit, and other plumbing services across all the floors. 3D BIM modelling proved to be an invaluable asset during this exercise.

"Every project is unique and poses its own challenges. Sometimes thinking outside the box or deep within the intricacies of the box produces the best results for the client. Keeping the cost of the project down, it was necessary to track every activity of the project and provide a centralized source of design information to all consultants working on the project by linking it to some tool to virtually track and manage the complete project at every stage," said Viraj Voditel, CEO, Tecture Structures Pvt. Ltd.

## The Solution

Autodesk Revit enables the Tecture team

members to keep up with edits and changes easily, during both review board and client approval processes. "We were originally attracted to the software because of its 3D capabilities, and learned that its integrated Virtual Building model thinks the way we design buildings," Viraj Voditel observed. "Revit allows us to explore the design more completely without worrying about coordination or collaboration with the client and consultants working on the project. We can easily import a 2D site plan done using any tool into Revit and create 3D information rich models for better visualization," added Dayesh Jaiswal.

Using Revit, Tecture gave virtual mock-up for curtain walls, façade, MEP components etc. to all the players involved in the project. The accuracy of the Revit's 3D models gave a big advantage to convey design to client and people working on site. Autodesk Navisworks supported in reviewing of integrated models and data with stakeholders as everyone involved in the project could easily visualize the complete project and make more informed, real time design decisions. A link between the Revit model and Oculus Rift was also established to give project stakeholders an idea of exactly how their building was going to look like after it had been constructed, in a 1:1 scale. Tecture conducted meetings periodically to resolve the gap between design and onsite construction activity using the Navisworks platform as unique delivery model and management tool.

"Autodesk Navisworks allows us to make information accessible to the right person at the right time. It is a great tool for executing that role and bringing accessibility into the design process early ensures that information reach decision maker faster, which ultimately leads to fewer changes and minimizing inconvenience in planning every aspect on the site in advance," said Dayesh Jaiswal.

Tecture team members used Dynamo Add-in for Revit to enhance their workflows. The Dynamo platform helped in finding optimum solutions, and shift through design options. Autodesk BIM solutions were also used in exploring internal spaces and furniture in the hotel virtually giving various interior options that could be more easily reconfigured to better meet the unforeseen needs of the Hotel in the future.

## The Result

The economic investment of shifting to Autodesk BIM from traditional 2D CAD is quickly recovered. Autodesk BIM saves many man hours on a given project, so even for smaller businesses it offers a good return on the investment. It also provides a unique

opportunity to include clients as co-producers of the solutions Tecture develops. "Autodesk BIM platform is extremely intuitive and simple to work with. It has nearly all the functions and features we need in order deliver the best solutions for our clients. It is a very efficient and fast program with a fully-developed module for visualization, and this way it covers our needs. We strongly recommended BIM to our partners to improve each step of the design workflow, not to mention the seamless communication of coordinated design," said Viraj Voditel.

Tecture stayed well ahead of the project's original timeline. Construction on the NIT Bus Terminal project is underway. "There's no question that Autodesk BIM platform helped us avoid delays and gain time throughout the project. The ability to coordinate with various design disciplines detailing, structural, architectural, and mechanical was absolutely vital to the success of this project. The Autodesk BIM platform has really helped change the attitude of the teams we worked with and led to a more collaborative approach," concludes Arnav Jain.

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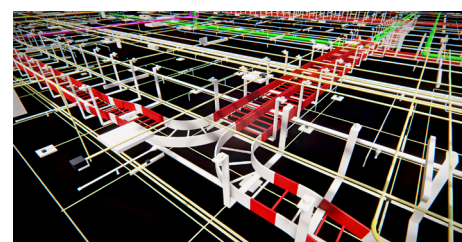


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