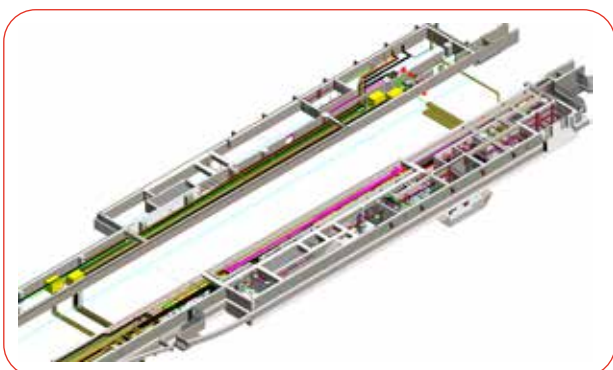




**Connecting people –  
laying the tracks of tomorrow**

Type of Project	Client Industry	Location	Project Duration	Tools Used
Metro Station	<b>GC(Electrical contractor)</b>	<b>USA</b> 	<b>2.5</b> months	Revit+ Navisworks

Project Profile	Team details
100,000 sqft	Project Lead: <b>12</b> Yrs   Electrical BIM Modelers: <b>8 &amp; 12</b> Yrs ELV BIM Modeler: <b>5</b> Yrs



The customer was a premier general contractor (GC) specializing in electrical and rail systems. As a leader in completing complex and large-scale transportation, industrial, and infrastructure contracts, and providing electrical, construction and maintenance services to the energy sector, the customer had carefully crafted a reputation for themselves as a trusted and reliable partner in large-scale and complex projects.

The project – a crucial metro rail station measuring over 105,400 square feet including entrance pavilions on either side of the tracks. The project was complex by itself and being responsible for handling potentially millions of commuters each year, the codes and standards were equally stringent. Furthermore, as a project of its scale, the number of stakeholders were also vast and diverse, making consensus cumbersome and adequate program management an absolute necessity.

The multitude of contractors involved in the construction also meant that their diverse data languages had to be incorporated into a single model, and coordination with each of the contractors' activities was crucial to prevent rework and cost overruns that could have a disastrous effect on the reputation of the GC. Hence, the customer required in addition to the standard deliverables, a 3D modeling standard that could be released to contractors to bring them all on the same page when it comes to specifications and compliance requirements.

Enventure was selected after we demonstrated our capabilities and initially mandated the creation of the LOD350 model for Mechanical, Electric, Plumbing, and Firefighting (MEPF) services, and the required models and construction drawings. Once Enventure began executing the project, the customer was also convinced with our skills and experience, to expand the scope to include the role of electrical subcontractor.

## Enventure Approach

As a BIM Service provider with considerable experience, the project, albeit complex was only a matter of a higher volume of work, rather than difficult to execute. However, as a mantra that we follow, past successes aren't a guarantee of future performance. Hence, we brought in the entire gamut of Enventure's documented knowledge and leading processes, especially our REFR approach where we were:



Responsive in our collaboration with the customer to facilitate a swift and complete knowledge transfer that in-turn reduced the number of Requests for Information (RFI) and Requests for Clarification (RFC) during the course of the project. By design it also meant that the execution would be faster.



Efficient in our estimations and approach to the work. As is the case with all of Enventure's engagements, the execution began with identifying potential reusable components, organizing them into families and their subsequent parametrization, allowing for dramatic reductions in turnaround times.



Fast both in the turnaround of the models and associated drawings, as well as in our grasping of the typical challenges faced in such projects, the potential for value engineering, and most importantly, in collaborating with the customer to facilitate smoother approvals.



Reliable in our ability to incorporate output from a variety of toolsets into Revit and Navisworks

Ultimately it was a combination of these four traits that spelt the success of the engagement.

## Project/Solution Overview

To facilitate a smoother construction execution, Enventure used a BIM model to integrate the different design components and their associated Bill of Quantities (BOQs). Using the CMP also allowed the customer in scheduling both procurement and construction activities to minimize inventory and improve working capital utilization.

Issuing a 3D modeling standard at the beginning of the engagement allowed setting supply guidelines for the different contractors to apply to their designs. It also helped in standardizing the part encoding and naming conventions to prevent conflicts and ambiguities in the final output. Using Industry Foundation Classes (IFC) as the basis to create the model interface further improved collaboration by allowing for consistent import of data from the different tools used by the other contractors.

Enventure was able to standardize the parametric families so there would be no ambiguity or conflict among the different parts and components in the extracted BOQ. The biggest challenge, however, was efficient routing in the face of a full-glass elevation. The MEPF team identified areas where there were more efficient alternatives to the routing and made appropriate recommendations to the customer.

## Customer benefits

Every large project is a challenge, and every project with multiple stakeholders, partners, and contractors adds new and different dimensions to the complexity in execution. This project was no different. With the multitude of contractors contributing to the final model, clashes were expected and clash coordination across services was definitely a challenge. That said, the project was executed well within time, leading to a variety of benefits to the customer including:

- Smoother approval of the plans due to strict adherence to building codes and standards. Enventure's knowledge of US building codes also reduced rework by a massive 36%
- With more efficient electrical conduits and innovative routing to hide the piping in the glass facades, there was a significant 30% reduction in construction costs
- The buffer teams and the step-delay approach paid rich dividends of a 22% reduction in project duration allowing the customer improved scheduling and effective control on construction costs

## Conclusion

Did we anticipate the customer asking us to take on the role of the electrical subcontractor? Not really – but we were ready. One of the most important lesson learned from this engagement was the simple fact that trust is built on performance. And delivering Responsive, Efficient, Fast and Reliable engineering services definitely put our customer at enough ease to consider us to fill a considerably challenging gap in the project scope. At Enventure, engagements like these convince us that in 23 years of operation, we have adopted the right processes and the methodologies, although as we always say, past performance doesn't guarantee future success, unless of course, we learn at each step, and treat each new project as an opportunity to prove ourselves all over again.