CASE STUDY
Architectural & Commercial

Fibergrate Composite Structures
Building the World to Last®

Project Specs

Location: Metro Station - Monterrey, Mexico
Application: Rooftop Window Structure
Product: Custom FRP Pultruded Shapes

Overview

One of the main public transportation systems in Monterrey, Mexico, the metro rail, required the construction of a window structure at one of the stations. Vidrio Bisel, the company in charge of this project, was looking for an electrically non-conductive alternative to structural steel to build this structure. After comparing the electrically non-conductive properties of traditional materials against fiberglass reinforced plastic (FRP), the contractor realized that FRP was the ideal material for this project.

Problem

The structure would be installed on the fourth floor of the metro station with a high voltage post outside of the building. Due to the proximity of the high voltage post, the material used for this structure had to be electrically non-conductive. Additionally, using a crane to lift and move the material into the building could be dangerous because the post was only seven feet away from the application site, so the material had to be light enough that one or more workers could carry it to the installation area on the fourth floor.

One side of this structure would be part of the façade of the building, so it would be exposed to the wind, rain, and sunlight. It was necessary to utilize material specifically designed for maximum UV resistance and to withstand any weather conditions. Also, the material used for this project had to be custom made because the client requested that this structure had no visible hardware and asked that all the nuts and bolts were replaced by internal joints to make the application aesthetically pleasing.

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Solution

Vidrio Bisel selected Fibergrate Composite Structures' FRP products for this project. The sales representative and project manager reviewed the requirements for this application and suggested custom FRP pultruded shapes. FRP pultruded shapes are designed to replace steel shapes and are commonly used as window stiffeners and wall panels. They can also be customized according to the needs of each project, and they have the following benefits:

- Electrically Non-Conductive: The electrically non-conductive properties pultruded FRP products increase the safety of the workers in charge of the installation as well as the safety of the civilians who use this metro station even if one of the cables from the high-voltage post outside of the building touches the FRP structure.
- Lightweight: FRP is considerably lighter than steel. For this project the workers were able to pick up and carry the material with their own hands and take it up to the fourth floor without any issues. The lightweight properties of the pultruded shapes also helped reduce shipping costs.
- Corrosion Resistant: Fibergrate's FRP products are known for their ability to provide corrosion resistance in the harshest environments, including outdoor spaces. Since part of this structure would be in the exterior of the building, the corrosion resistant properties of FRP will help maintain structural integrity over time. In addition, they were fabricated with our ISOFR resin system, an isophthalic polyester resin formulation, designed for applications where there is moderate exposure to corrosive elements.
- UV Resistant: These custom FRP pultruded shapes have maximum resistance to harmful UV rays.
- Custom Design: A sample was sent before the installation took place, so Vidrio Bisel could perform compatibility tests and check if the glue used in the project successfully adhered to the FRP and to the glass. In addition, this product complies with the aesthetic requirements outlined by the client at the beginning of the project. The design has no visible hardware and the entire structure is held together through internal connections as requested.

The success of this project was due to the fact that throughout the process, Fibergrate responded to all feedback and used that information to make suggestions that ultimately improved the FRP structure. The customer was so happy with our product that they took the time to train their employees on the benefits of using Fibergrate FRP in their future projects.

[CLICK OR SCAN THE QR CODE TO LEARN MORE ABOUT THE BENEFITS OF FRP]

Phone: 800-527-4043 | Fax: 972-250-1530 | www.fibergrate.com