

SAVANNAH CONVENTION CENTER EXPANSION

Size: 350,000 SF



The Project

Name: Savannah Convention Center Expansion; Savannah, Georgia

Designers: TVS

Project Stage: Construction

Practice Area: Public Assembly

Building Size: 350,000 square feet

Area of Glazing: 50,000 square feet

Benefits

- Precision in identifying energy and cost-saving opportunities using frit patterns
- Balancing occupant comfort by measuring building performance month by month
- Savings of several days worth of design hours
- Delivering and value engineering a sustainable façade solution in late stages of design

Features

- Identified optimal uses of fritting patterns and glazing types
- Precise breakdown in how glazing impacts performance
- Effective measurements of solar loads monthly to determine impact

Project Overview

Shading and fritting are two passive design strategies commonly used to combat excess solar loads and the overheating of buildings in hotter climates. When used together, they can create balanced and effective shading strategies. However, applying and optimising frit patterns to glazing can be difficult in Revit, and often require oblique ways to dynamically analyze the impact of frit.

Designers at TVS used FenestraPro to locate and define the density of shading and glazing frit patterns for the optimal distribution of shading values required by the building code. While collaborating with engineers

in the CD stage of the project, TVS utilized FenestraPro to determine how frit patterns and glazing types would impact the overall energy performance of the building while still meeting code compliance. **By utilizing FenestraPro's Frit feature, TVS streamlined their design workflow and avoided reiterating frit patterns in a cumbersome Revit environment using a trial-and-error approach. This resulted in them saving several days' worth of design hours.**

Identifying Optimal Frit Patterns and Glazing Types

The Savannah Convention Center expansion project consisted of 50,000 square feet of glazing to north, east,

and west-oriented facades. Designers used FenestraPro to analyze different percentages of fritting pattern when it is applied to each isolated façade area. The designers used FenestraPro to calculate:

- the impacts of fritting and shading on solar heat gains to spaces relating to the different orientations;
- validation of the of the selected glazing for the project.

The ability to review monthly solar load data was critical to understanding how the Savannah Convention Center would perform seasonally. Employing an environmentally responsive design strategy and identifying a balance between using specific glazing types, frit patterns, and shading is necessary

to meet project requirements. “FenestraPro is a great platform to look at orientation and façade responses. We were able to locate the best areas for fritting while isolating different facades to understand the impact shading would have on overall energy performance” states Paul McKeever.

FenestraPro calculated that to achieve the right balance and be thermally comfortable for occupants, different types of glazing and a combination of a recess and frit pattern were needed:

- The West façade would require a clear form of glazing and a combination of a recess, deep overhangs, and frit pattern.
- The North façade would require no frit pattern and an abundance of clear glazing was used to bring daylight deep into the lobby and exhibit hall spaces.
- The East façade did not require as much glazing as the other facades. Designers demonstrated to engineers that the analysis on how much frit pattern should be used was correct.

Designers found that being able to look at each façade and know instantly whether a problem exists with the solar heat gains and daylighting was crucial in streamlining the time spent on design.

Conclusion

The designers at TVS used FenestraPro to solve performance issues that were identified during collaboration with engineers in the CD stage. FenestraPro provided designers with the ability to understand and measure the impact of using fritting patterns and different glazing types per façade while optimizing for occupant comfort, **leading to considerable savings to the design team.**

Staying within the stringent shading requirements of glazing for the warm and humid Savannah climate while allowing for an abundance of daylight was a design driver. FenestraPro was able to circumvent this problem by precisely identifying how different combinations of frit patterns and types of glazing could be distributed most effectively to ensure occupant

comfort while remaining code compliant.

FenestraPro removed the need for TVS to rely on an outside consultant for measuring the effectiveness of passive design strategies as the designers in-house were able to understand the environmental impact of their design decisions.

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Paul McKeever
High Performance Design
Quality Leader
TVS, USA

Jay Thomson, Principal
Sean Toomey, Senior Associate



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