

Case Study

Pinnacle Framing Systems with Photovoltaic Glass

Wasco Part of

VELUX Commercial



Massachusetts State House, Boston, Massachusetts

CHALLENGE:

One of main goals was to create a green, energy-efficient daylighting solution. This was major roofing project with twenty-one skylights requiring replacement less than fifteen years after the original installation because of continuous leaks, which also damaged much of the custom plasterwork. All roofing abutting the skylights had to be replaced. Due to past problems, a stringent quality control program was necessary. Each section of welded copper flashing and gutters needed to be submitted for approval before installation.

This was a very important historical building and incredibly busy work site with a steady flow of senators, congressmen, as well as public tours, so minimal impact was crucial.

The centerpiece of this project was an expansive atrium skylight over the Memorial Hall which was to contain photovoltaic film laminated within the glass, converting solar energy into electricity while allowing some light transmittance in this very public area. "This is an extremely complicated manufacturing process to integrate the thin photovoltaic film within a sealed insulated glass structure not normally meant to house wires and connectors." said Ed Malley, Project Manager for the general contractor, The Cheviot Corporation.

Another challenge was finding one company that could supply the two different types of photovoltaics specified and meet all that the stringent specifications laid out in the plans.



The large atrium skylight is a Pinnacle Segmented Vault with integrated photovoltaics in the center.

VELUX America LLC

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SOLUTION:

Wasco's Pinnacle skylight system was chosen because its leak-resistant sill enclosure guards against air infiltration and water intrusion and its large span capability.

Wasco created a scale model – big enough to walk under – to demonstrate the high quality of manufacturing and to test the performance of all critical sections. The entire Massachusetts State House construction management team was then invited to the Wells, Maine plant to see how it would all work. "I must say that everyone was very impressed with the kind of operation Wasco had and their entire high-tech production facility," said Malley.

Besides being aesthetically pleasing, integrating the photovoltaics into the skylight structure meant that the panels would not have to be removed in any future roof repairs. Wasco made deeper, custom pressure bars for the wire and connectors to run under the face caps to not compromise the integrity of the system. More traditional, non-light transmitting photovoltaic glass units were used in non-public areas.

The remaining skylights were more traditional non-photovoltaic daylighting systems, and a handful were re-glazed keeping the existing rafters and purlins while adding new pressure plates and covers.



Non-photovoltaic Pinnacle pyramid and single pitch skylights over the stained glass ceiling in the Hall of Flags.

The Cheviot Corporation

The Cheviot Corporation is a specialty contractor which provides a variety of pre-construction and construction services in the curtain wall, glass and glazing, aluminum window, historical restoration, metal panel, acoustical ceiling, acoustical wall panel and access floor aspects of a project. We furnish and install products in all of these specialties.

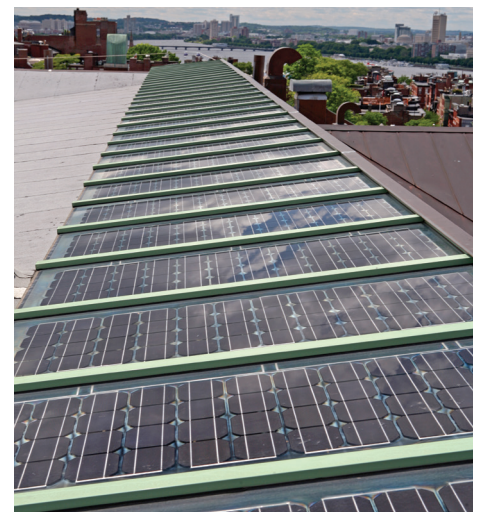
We are capable of meeting very tight construction schedules where a large coordinated union workforce is required to complete a building.

Whether the scope is renovating an existing building or working on a new structure, The Cheviot Corporation provides its customers with professional services and value sensitive pricing.

The Cheviot Corporation's main office is in Massachusetts, with a satellite office in Rhode Island.

When clients hire us, they understand that we are committed to excellence and will be an integral part of their construction team.

Cheviot is well financed and has the bonding capacity needed for any project in our various fields.



Traditional non-light transmitting photovoltaic glass was used in non-public areas.

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