Harvard University Science and Engineering Complex (SEC)

History of the project

Setting a new paradigm for scholarship in the 21st century and beyond, Harvard's Science and Engineering Complex [SEC] is designed to inspire learning and scientific discovery while showcasing sustainability. The building weaves together a number of threads of contemporary life, which will influence current and future generations of researchers: engineering's decisive influence on the exploration and resolution of some of the world's most pressing problems, the critical importance of cross-disciplinary efforts to achieve major scientific breakthroughs, and genuine leadership in sustainable design and urban development. The building's adaptable, innovative environments support the school's profound commitment to cutting-edge academic collaboration, create vibrant public spaces at a variety of scales, and set a distinctive architectural tone for the Allston campus.

The eight-level, 544,000-square-foot building is organized into three four-story volumes connected by two glazed, multi-story atria that provide light-filled social hubs for faculty and students. The upper stories are clad in a facade whose layered design celebrates and calibrates the scale of the large volumes that comprise the research activities of the building, creates an identity for the complex, and plays a crucial role in the efficient energy performance of the building as well as occupant comfort.

How did stainless steel contribute to the sustainability of the structure?

We lowered the embodied carbon by almost 90% going to stainless steel from aluminium. The stainless steel used was mostly recycled material. The stainless steel after decommissioning can also be recycled.

Why was stainless steel chosen?

With stainless steel, we could fabricate structurally stiff shapes with the minimal amount of material, reducing cost, significantly reducing embodied carbon, and investing in a material that is fully recyclable for the future.

Harvard University Science and Engineering Complex (SEC). Picture © Brad Feinknopf.

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The building has four different façade treatments—including the world's first hydroformed stainless steel shading screen—each contributing to energy efficiency and occupant comfort. The hydroformed screen sheaths the upper-floor laboratory and research spaces. The panels of the screen are precisely positioned to shield against solar heat gain during warmer months, while admitting beneficial sun during the winter, significantly reducing cooling and heating loads on the mechanical plant year-round. The screen is also dimensioned to reflect daylight towards the interior while maintaining large view apertures to the exterior. On the two lower floors, highly transparent glass ribbons reflect daylight deep into the building interior. The central atrium and the major entries have multi-story all-glass façades that are shaded by integrated roof planes at varying heights. All façade systems incorporate operable vents for natural ventilation and meet stringent levels of thermal performance in order to maximize energy savings.

Harvard University Science and Engineering Complex (SEC). Pictures © Brad Feinknopf.

Category: Education

Location: Allston, MA, United States

Environment: urban

Use: Facade sunshading and attachment tension rods

Material: 1.5 Stainless steel sheets, from 68% post consumer recycled and 19% pre-consumer recycled stainless steel (87% total recycled) Ceramic bead-blasted finish

Material thickness: 1.5 mm

Material quantity: 12,800 sheets x 1.5 mm thick stainless steel x 1.5 m²

Architect: Behnisch Architekten

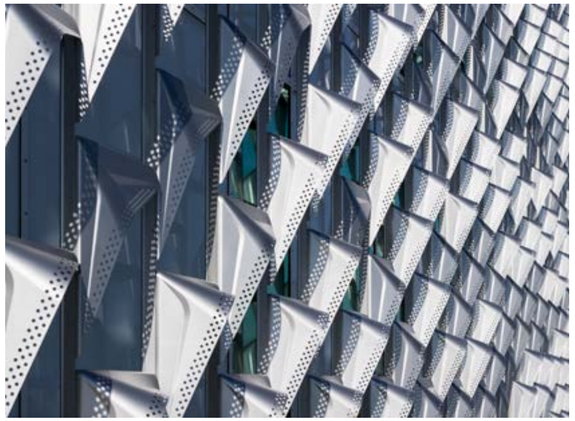
Stainless steel fabricator: Edelstahl Mechanik, Göppingen, Germany

General Contractor: Turner Construction Company

Façade Contractor: Josef Gartner GmbH / Permasteelisa North America Corp.

Photographs: Brad Feinknopf

More information: vimeo.com behnisch.com



Competing or alternative material(s)

Anodized Aluminum (3mm)

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