

# ARCHITECTURAL RECORD

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*The modestly scaled Software Engineering Institute holds its own within the heroic architectural heritage of Pittsburgh's academic and cultural heart.*

## Soft machine



The mythology of software development lionizes nerds with pale complexions tinkering in the garage, or envisions post-adolescent gadget freaks laboring within anonymous reflective-glass slabs in Silicon Valley. An image *not* usually conjured up is Pittsburgh's historic Oakland section, home of an eclectic assortment of academic, cultural, and religious structures built in a dizzying variety of early 20th-century revival styles. Yet here, amidst monumental buildings memorializing the creators of Pittsburgh's industrial might, is the setting of Carnegie Mellon University's Software Engineering Institute (SEI). Sponsored by the U. S. Department of Defense, the facility undertakes research on problems related to the armed forces' multifarious technologies (devising a common visual interface for electronic jet-fighter navigation screens, for example).

In shaping the SEI, the Pittsburgh office of Bohlin Powell Larkin Cywinski, teamed with local architect/engineer Burt Hill Kosar Rittelmann, addressed the Institute's introverted program and its urbanistically important site. The structure is articulated as three parts that express a hierarchy of public to top-secret spaces. A small but prominent pavilion, set behind a semicircular plaza, lies on axis with the 1906 Cathedral of St. Paul across Fifth Avenue (opposite and page 81), housing such public rooms as the entrance vestibule, library, conference suite, and boardroom. Reflective glass encloses the secure office/laboratory block, which has been detailed in elevation to echo the heroic scale of the Mellon Institute, a column-ringed 1930s temple to applied research that lies to the west (pages 80 and 81). Mellon's street wall is extended by the skewed massing of this lab wing. SEI's third element, a 400-space parking structure, has been placed across an alley south of the building's main body (site plan).

The Institute's 154,400-square-foot plan is "thick and fat," in Peter Bohlin's words—an economical arrangement of building bulk consistent with zoning-code exigencies. Its parapet is deliberately aligned with the top of the Mellon Institute (middle). Inside, SEI's technicians perform most of their work in sound-insulated 10- by 13-ft office/laboratories that line the building perimeter. Offices are served by user-accessible wiring systems (diagram page 81), permitting harried researchers to quickly reconfigure equipment. Each work space is supplied with 2,000 watts of electrical power, enough to support engineering workstations and an assortment of personal computers and peripheral equipment. The enormous heat generated is swept directly into the return-air system through custom casework.

Though relationships among program elements were established with an eye fixed on the bottom line (a big chunk of the \$97-per-square-foot cost was allocated to mechanical systems that serve the structure's high density of equipment), the architects were also able to provide visual relief outside the confining individual labs. Coffee-break alcoves are located at major intersections, encouraging casual interaction among researchers whose work is often solitary; expansive corridors terminate in glazed conference rooms that bring the architects' exterior strategy inside, reintroducing even those occupants buried deep within the floor plate to their context (page 82). Neither high-tech nor even high-style, the SEI is respectful of both place and program; there is a kind of architectural hum as aspects of its heterogenous neighbors resonate throughout. Bohlin explains, "We wanted the building to look at the past as well as to the future. I think we got it right." *James S. Russell*



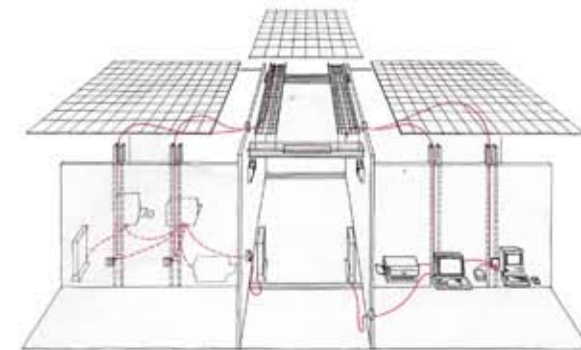
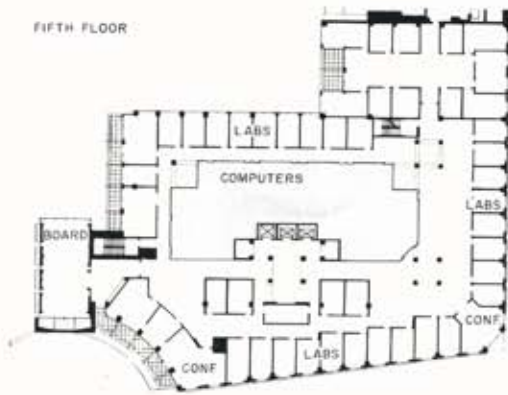
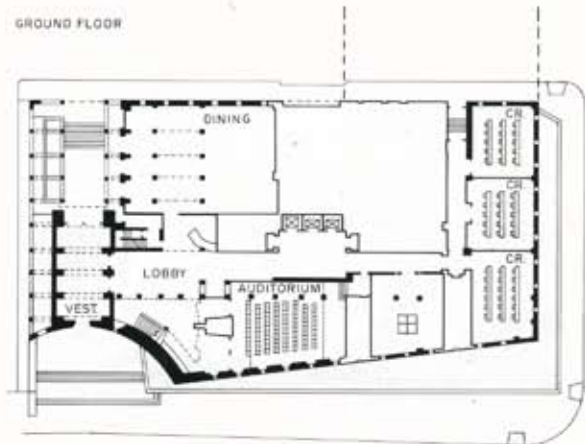
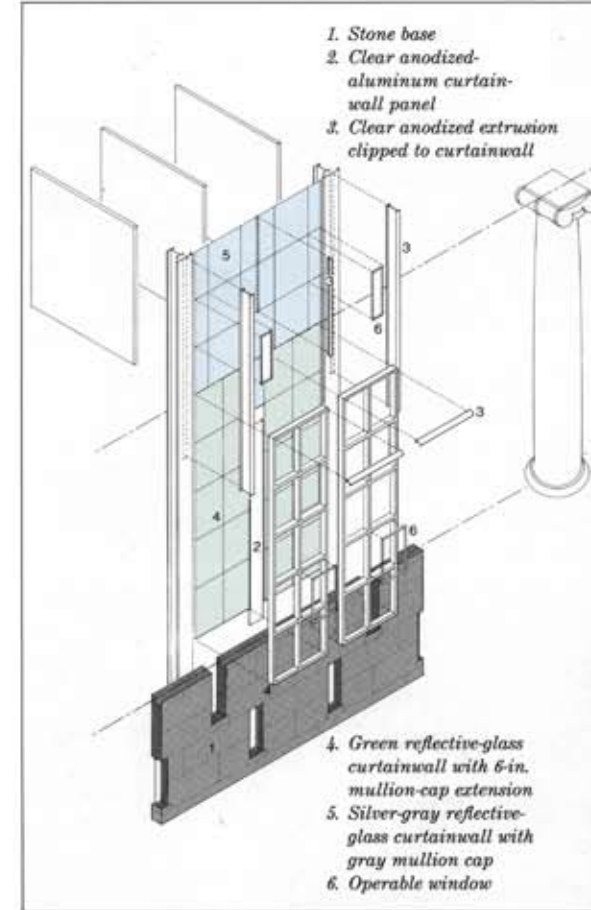
Though undeniably contemporary, the SEI's Fifth Avenue elevation responds to the rhythm of the neighboring Mellon Institute (left), itself built on such a heroic scale that its 65-ton columns were each carved from a single block of Indiana limestone. The SEI's window wall rises out of a matching stone base and changes both in pattern and color at the level of Mellon's entablature (photo below and axonometric opposite). Aluminum extrusions attached to the curtainwall deepen shadow lines. The limestone-



clad entrance pavilion (below right) anchors the eastern edge of the building, its verticality reflecting the neo-Gothic St. Paul's Cathedral across the street. Computer wiring has been made entirely accessible to users: matched C-studs form chases to accessible ceilings,

which in turn lead to cable trays below the corridor ceiling (bottom). Workstations can be linked to other workstations, off-campus networks, file-serving computers on each floor, the basement computer room, or a nearby supercomputer.

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The SEI's deep plan motivated the creation of special interior places. An extruded-aluminum light fixture—evocative of the city's industrial roots—marks the ground-floor auditorium (left). Where corridors intersect, coffee alcoves encourage casual discussion (background in photo below). In the top-floor boardroom, diffuse light enters on all sides (bottom left). Originally slated for a mainframe computer, the

basement computer room (bottom right) now houses a series of special-use minicomputers. Lining the building's corridors, easily accessed cable trays are supported on U-shaped aluminum extrusions and brackets incorporating light fixtures (opposite). On the floor, processing units—their fans whirring, their LEDs winking—resemble nothing so much as ranks of tiny robots.



**Software Engineering Institute**  
Pittsburgh, Pennsylvania

**Client:**  
Carnegie Mellon University  
Pittsburgh, Pennsylvania

**Owner:**  
Regional Industrial Development Council of Southwestern Pennsylvania  
as developer for Carnegie Mellon University

**Architects:**  
The SEI Joint Venture, a joint venture of Bohlin Powell Larkin Cywinski and Burt Hill Kosar Rittelmann Associates  
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**Burt Hill Kosar Rittelmann Associates:** P. Richard Rittelmann, FAIA, Principal-in-Charge, Building Systems; David L. Henderson, AIA, Principal-in-Charge, Administration; Richard H. Forsythe, RA, Project Manager

**Engineers:**  
**Structural:** Dotter Engineering, Inc; Eugene Dotter, PE, Principal; Chuck Boyle, PE, Project Engineer  
**Mechanical and Electrical:** Burt Hill Kosar Rittelmann Associates; Paul Scanlon, PE, Project Manager

**Transportation and Traffic Planning:**  
Wilbur Smith Associates

**Construction Manager:**  
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Karl A. Backus

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