The exposed mechanical ducts and steel joists result in a light, airy interior office space.

perforations, and batting as required. Lightweight concrete was utilized to reduce the seismic mass of the building. The same metal decking could be used at the sloped roof areas, providing a uniform finish surface.

Piece by piece

The architect's vision of a completely exposed structure guided the design of individual details, as well as the overall building. The intense collaboration between the architect and structural engineer continued through the preparation of construction documents. In a building where the architectural design relies on the steel elements for its expression, these elements had to be coordinated carefully in order to be aesthetically pleasing as well as efficient. For example, the welded seat connections for the girder trusses were designed to look like corbels, with no exposed bolts. The corbel design accommodates the 3.2-degree skew at each column and also allows the girders to be dropped onto the columns and field-welded into place. It also expresses architecturally the support mechanism for the trusses.

Regularity in the member sizes and connections was especially crucial . . .

Regularity in the member sizes and connections was especially crucial to ensuring that the exposed structure blended and fitted with architectural elements such as windows, rainwater leaders, and sunshades. This was accomplished by electronically overlaying CAD drawings of structural and architectural details and sections. One example of the necessity for regularity is found on the exterior. Because the steel is exposed, the glazing had to fit inside the girder trusses and the first diagonal of the steel joists. Panel points of girder trusses were aligned with window mullions to provide visual continuity between the floors.

Expanding the role of the engineer

To make an office environment function without traditional ceilings and walls required creative structural solutions for design issues rarely involving structural engineers. For example, because of the absence of a wall system, traditional methods of weatherproofing and glazing attachments could not be used. To attach the windows, a continuous steel angle was welded to the inside face of the top chord

Vision of steel

The dramatic image of the civic center was based on Pittsburg's history as the center of a major steel-manufacturing region since 1910. The U.S. Steel Columbia-Geneva plant (built circa 1926) was the model for the structure. Architect Fani Hansen (Hansen & Associates, Tiburon, Calif.) wanted to tie the building to the center's roots, making a place with which the community could identify. The building's structural steel elements were manufactured just a few miles from the site at Concord Iron Works. The vaulted main roof over the third floor was designed to reflect the local steel mill architecture, rising 25 feet to the ridge, with steel gable trusses spanning 43 feet and a continuous clerestory over the ridge.

"The main lobby is conceived as a cathedral-like space, inspired by Pittsburg's steel mill architecture," said Hansen. "Landscape and water features evoke the fishing heritage, and paving patterns incorporate ethnic art motifs," she said. "The steel structure, visible from the exterior and interior, includes exhibit space and murals, elements of local history with color, and artwork to identify Pittsburg's diversity."