



Steel "branches" extend from the central pipe (or trunk) to support the stairs.

joists and girders curving down the length of the building. The longitudinal walls are entirely glass (placed on the inside of the structural steel framework) making the building transparent.

Structure as expression

From the earliest conceptual drawings, structure played an important role in the design of the building. The architect, Fani Hansen (Hansen Associates Architects and Planners, Tiburon, Calif.), envisioned a steel-framed structure that would reflect Pittsburgh's history as a major steel-manufacturing city. She also designed the semi-circular plan and overall shape — adding a humanizing softness to the building and interest to the structural form.

Creating the curved form and intricate

cross-section of stepping floors, light wells, and clerestories required an unusually close collaboration between the architect and engineer. The curve was broken into repeated orthogonal segments and framed with structural steel



The third-floor council chamber with gable manufactured joists and continuous window walls.

joists and girders. Symmetry of the plan was an objective for both aesthetic and economic reasons. The plan is organized around a center, glass-roofed lobby, with symmetric wings on each side. Braced frames are located around the three-story portion of each wing, with additional frames at the one- and two-story perimeters. Horizontal bracing is utilized at clerestory areas to provide continuity for lateral loads.

Steel trusses are the dominant structural and architectural elements of the building — they are light and graceful as well as efficient.

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The geometry of the tube steel girder trusses mimics that of the open web steel joists, with the interior structure resembling a space truss as girders and joists intersect. Extensive use of bridging and bracing elements further highlights the truss form. The lateral load-resisting braced frames are arranged as inverted chevrons to blend smoothly with the girder trusses. The trusses also aid the architect's visualization of a light, open interior. No heavy girders block the exterior windows or obstruct the flow of space along the length of the building.

Careful collaboration

Constructing this building required uncommon planning and coordination by all design professionals. In most projects, design development for structural engineers involves



The Civic Center on opening day. The top chords of joists extend to create cantilevered exterior decks.