

33 Maiden Lane: A Landmark Among Landmarks



33 Maiden Lane is architect Philip Johnson and John Burgee's monument to prestige in the heart of New York's financial and insurance district. Its bold use of masonry turrets highlights an inspired blend of classic and contemporary design, planned as a complement to its landmark neighbors, Federal Reserve Bank, Chase Manhattan, and Marine Midland corporate headquarters.

The structure's seven turrets rise from street level to the top of this 26-story office building, giving it a fortress-like appearance, while, at the same time, providing seven corner offices at each floor with expansive views. At street level, a covered pedestrian space leads to a three-story lobby under enormous brick and limestone arches.

"A major advantage of steel framing for this structure is the availability of electrified floor decks at each level—an attractive feature to tenants with varying office equipment and layout needs," said Morton H. Eligator, P.E., partner in Weiskopf & Pickworth, Consulting Engineers. The structural engineer continued, "We were also able to design with fewer foundation piles because of the reduced weight of a steel-framed building." A concrete-framed building would have meant much greater building weight, and thus, in this structure's foundation, some 700 piles instead of the 600 to be used with the steel frame. Additionally, an electrified floor deck would have been out of the question in a concrete beam and slab framing system.

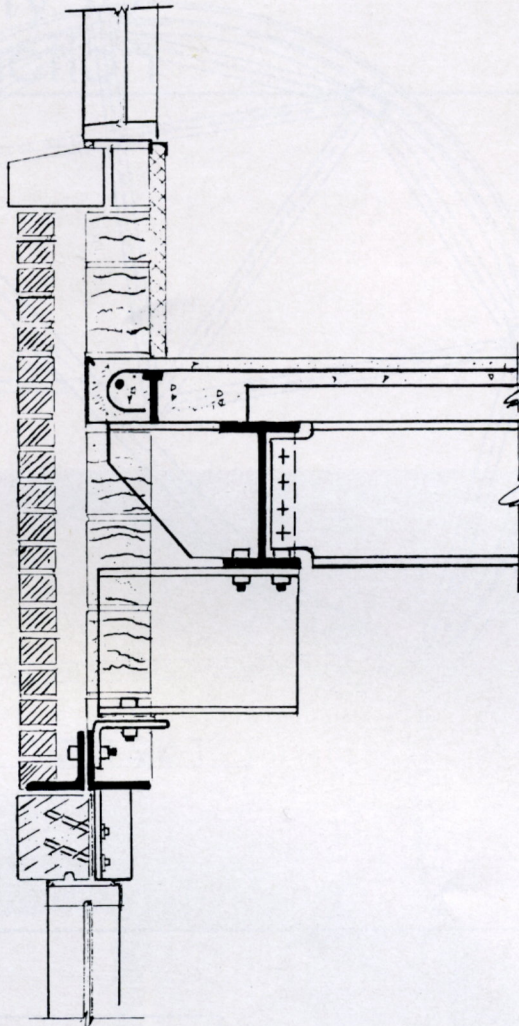
The 26-story high brick-faced turrets provided a complicated design challenge, because of their shape and projection from the building.

"Originally, we considered having the steel cantilever out, because there were so many window openings that some type of stabilization was necessary. The solution: to design each turret with several steel posts, buried in and bracing the masonry wall, which is on a radius," said Eligator. This meant extremely tight steel tolerances. Thus, for this job, "we halved the permitted tolerances of American Institute of Steel Construction (AISC). This became part of the contract documents."

Perimeter columns in the frame are A36 steel; the rest of the steel framing is A572. "The tendency is to use a higher-strength steel in modern buildings because the cost premium does not outweigh the reduction in weight," said Eligator. "We used A36 steel in the perimeter columns to keep the stiffness of the overall frame greater in order to control drift in the building." Spandrel girders are field welded to the flanges of these perimeter columns to form a moment-connected frame for the entire building height. "In addition to these moment connections, we designed braced bents in the elevator core up to the eighth story. The combination of these two framing schemes constitutes the wind bracing system for the building," said Eligator.

To reduce the need for deep interior steel girders, composite girders are designed for each floor. "Composite floor beam design throughout was considered, but abandoned because of resulting excessive shoring requirements for concrete placement," said Eligator. The composite girders are formed by welding steel studs to the top flanges of steel girders, and placing concrete over the studs. When the concrete has set, both materials work together. This composite design was selected by HRH Construction Corporation in the early stages of the project, after evaluating various framing schemes developed by Weiskopf & Pickworth.

The 45-foot high pedestrian lobby

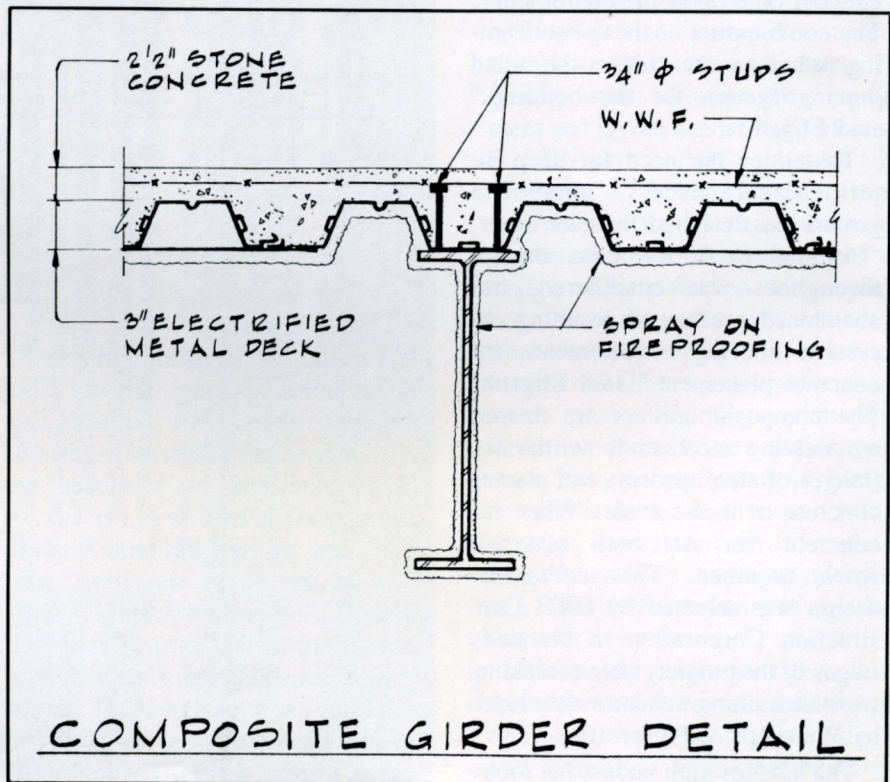
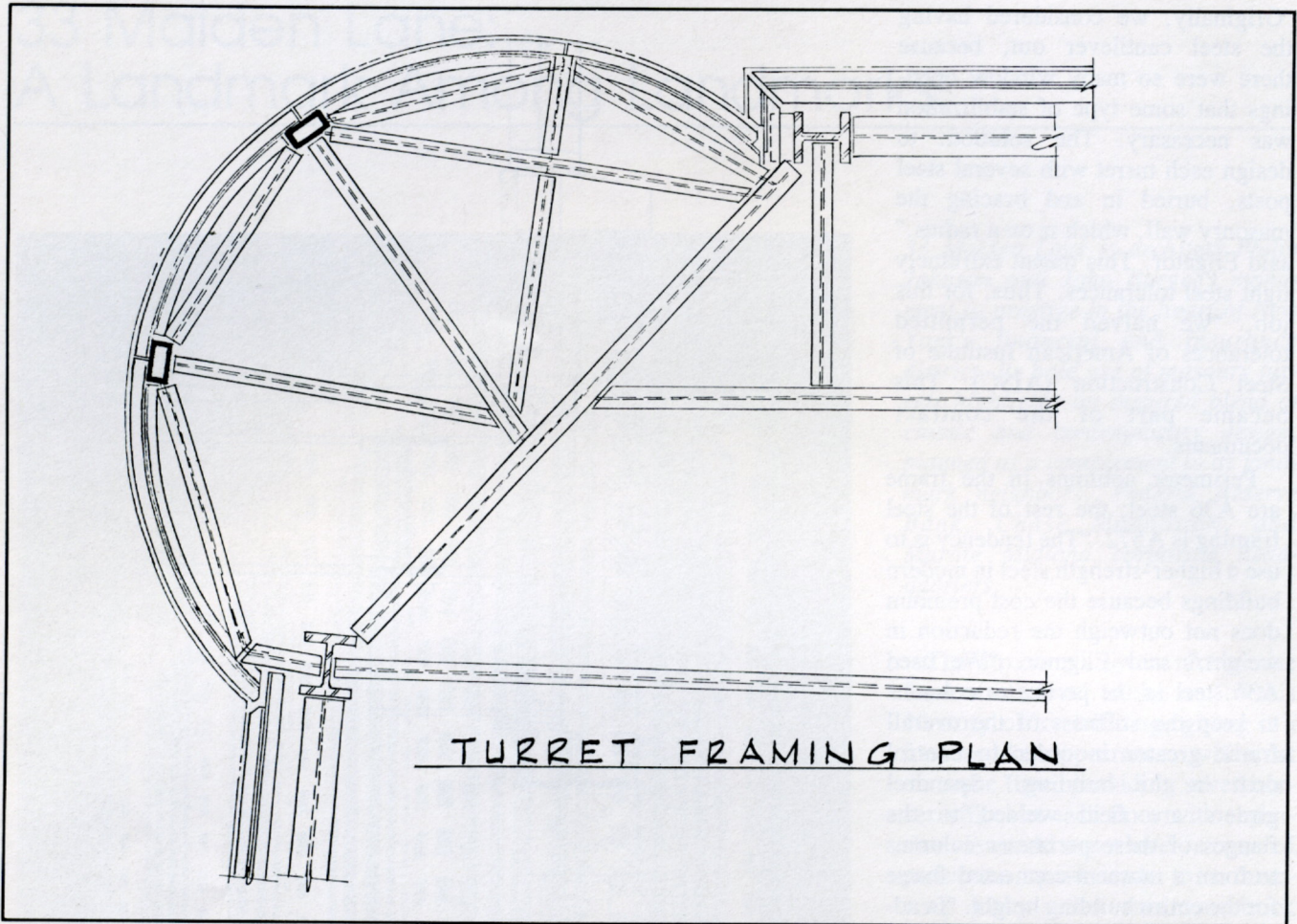


SECTION THRU TURRET

area is the first of its kind to employ large stone masonry arches. This design posed an interesting challenge to the structural engineers. "Limestone and brick arches are laterally supported on either side of the lobby by steel columns that are part of the larger structure," said John G. Shmerykowsky, P.E., associate partner and project manager. "As is usual in high-rise buildings, columns are designed to accept slight movement as the building reacts to wind forces. The lobby col-

umns here can move up to 1/2 inch in 45 feet, which meant that we had to design the stone arches with a system of expansion and control joints to accommodate this movement."

Like other designs of Philip Johnson and his firm, 33 Maiden Lane follows the trend of some modern designers who blend modern building materials and techniques with the elaborate form and ornamentation of earlier architectural styles.



33 MAIDEN LANE
Owner: Park Tower Realty Corp.
Architect: Johnson & Burgee
Structural Engineer:
 Weiskopf & Pickworth
Construction Manager:
 HRH Construction Corporation
Steel Fabricator: Grand Iron Works, Inc.
Steel Erector: Gem Steel Erectors, Inc.
Steel Tonnage: 6000 (structural steel);
 400 (Miscellaneous metal for
 window framing and lintels)
Types of Steel: A36, A572
Square Footage: 550,000