In the mid 70s, New York City began excavation for a new sewer interceptor along Columbia Street in South Brooklyn. Hundreds of years ago, this area is thought to have been under the waters of the East and Hudson Rivers. Even now, despite many layers of landfill, the water table is only 10 feet below ground level.

The sewer tunnel, dug to a depth of 25 to 35 feet, soon filled with water that had to be continuously pumped out. This massive pumping operation lowered the water table throughout the area and also reduced the upward pressure under the standard foundations of the surrounding tenement buildings. The combination of weakened landfill and reduced upward pressure completely changed the equilibrium of the ground supporting the buildings, resulting in the collapse of some and the need to vacate others. The City therefore condemned the area, razed the damaged buildings and promised to build residences on the levelled land. In late 1979, the City issued Requests For Proposals for single-family dwellings to be built along Columbia Street.

The designated developer, Kings-Monodnack Construction Co., Inc., won the initial rebuilding assignment in early 1980 based on plans for three-story apartments in seventeen buildings having foundations supported by pilings.

The memory of the fallen tenements, in the minds of neighbors and public officials, forced the developers and their engineers and architects to schedule a great many test borings and impact studies to determine the potential effects of excavation and pile driving on buildings adjacent to the project site. Every building within a 300 foot radius of a piling was examined to establish if it might collapse or need to be shored up and monitored or only monitored. If in doubt, the building was condemned.
"The inherent fire resistance of steel, its high strength-to-weight ratio, faster stick building potential with precut-to-size members and smaller waste of material to thievery were deciding factors in favor of lightweight steel framing."

and demolished by the City. Now known as the Columbia Terrace project, it satisfies the prime objective of the Urban Renewal Plan, as adopted by the N.Y.C. Board of Estimate in 1979 for new, low rise, low-density housing.

Phase 1 of this project started on President Street in late 1983 with 17 buildings having 51 one, two and three bedrooms completed and occupied by the end of 1984. Phase 2, also on President Street and Phases 3 and 4 on Carroll Street, are in various stages of completion. They are comprised of 129 apartments in essentially the same configurations as Phase 1.

The foundations for the building were specially engineered and consist of pile supports and grade beams. Pile driving was engineer-supervised. The foundation system consists of 25-ton treated timber piles supporting concrete pile caps, grade beams and structural slab. The three-story buildings, each containing three apartments, have 8-inch masonry party walls 40 feet apart and structural steel stud bearing partitions centered between the
masonry walls. Steel C-joists span and bear on masonry walls at the ends and the steel stud bearing walls at the center of each building.

The three-bedroom units are adjacent to the one-bedroom units and occupy the same size building as the two-bedroom apartments. Bearing walls are consistently spaced and a headed doorway in the bearing wall provides entry into the third bedroom.

**Framing Alternatives . . .**

Early in the planning stage, framing alternatives were reviewed in detail and included masonry/brick veneer, lightweight steel studs and C-joists, truss joists as well as conventional wood framing. Special permission would have had to be granted from the New York City Building Department if non-fire rated wood were to be used.

The inherent fire resistance of steel, its high strength-to-weight ratio, faster stick building potential with pre-cut-to-size members and smaller waste of material to thievery were deciding factors in favor of lightweight steel framing. As a result, there is no structural wood used in the Columbia Terrace project and waste, estimated to be 15-20 percent for wood, was down to only 2-3 percent for steel because much of the metal scrap could be used in various ways on the job.

Despite periods of adverse weather, the 129 units were framed out in only 16 weeks. Contributing to the speed of framing included on-the-ground prefitting and assembling of the 4-inch, 16 ga. bearing walls and window frames. Also, the steel C-joists could be easily lifted and quickly transported to where they were needed.

Essential to the efficient framing of the Columbia Terrace apartments was the engineering support and preparation of highly detailed shop drawings provided by Marino Industries Corp., the manufacturer of the steel framing components. On-time delivery to the job site of consistently accurate products helped to expedite erection of the metal framing.

There are many more development projects underway for this section of South Brooklyn by the City of New York. Some will combine low-rise residences with retail stores and others, further from the ill-fated sewer interceptor locale, are planned for mid-rise residential and commercial buildings.

Credits:

**DEVELOPER/GENERAL CONTRACTOR**
Kings-Monodnack Construction Co., Inc.

**FRAMING CONTRACTOR**
Kradam Drywall, Inc.

**ARCHITECT**
Wids DeLaCour

**FRAMING MANUFACTURER**
Marino Industries