Light Steel lowers the Cost

In Brooklyn, NY, Planners Needed a New, Less Costly Approach so Light Gage Steel Was Used Plus Off-site Pre-Fabrication With Predictable Results.

An ambitious housing program to provide low-cost residences for low-income homeowners is underway in the Brownsville section of Brooklyn, New York.

Known as the Nehemiah Plan and named after the prophet Nehemiah, who was directed by the King of Persia to rebuild Jerusalem, the project may ultimately provide 5,000 homes in a 20-block area, an area currently noted for its burned-out or destroyed buildings and empty lots strewn with rubble and trash.

The City of New York is tearing down the old buildings and clearing land which is then prepared for excavating and pouring 24 foundations in a row with each house having a plot of 18' x 100'.

During early design considerations, fire code restrictions called for fire

Interior framing components and prefabricated bannister.
retardant wood in exterior walls. Further deliberations introduced the possibility that exterior framework could consist of upper and lower panel assemblies of lightweight steel which not only would exceed fire code specifications but also permit off-site fabrication.

Modification of the plans to include steel framing for exterior walls and interior partitions resulted in major time and cost savings in the erection of each home.

**Stockpiling necessary**

The time required to fabricate the panels in New Jersey and truck them to Brooklyn was so short that stockpiling is necessary in order to await completion of land clearing and foundations.

All of the steel structural components are supplied by AWCI member Marino Industries, Inc., Westbury, N.Y. to Fjord Metal Partition, Inc., Midland Park, N.J., who prefabricates the panels and is responsible for all construction except masonry and finished roofs.

Essentially, each of the four panels per house is 177" x 92" high and all C-studs are 3-5/8" 18 ga. 24" on center. Precutting included the studs, tracks, headers and lintels, mills and bridging to size. Headers and lintels are 7-1/4" x 18 Ga. C-joists and bridging is 2" flat stock 18 ga. Top wall panels have two window frames and bottom panels have a window and a door frame. Panels are assembled horizontally on a flat plywood platform with jig stops accurately arranged to position and lock each component prior to fastening with self-drilling hex-head screws. Each assembled panel weighs approximately 250 lbs.

With a 3-man work crew, and if door and window frames are assembled in advance, 25 panels can be completed in a work day. With no pre-assembly, enough panels for 18-20 houses can be completed in a 5-day week.

A flatbed truck with panels for 5 houses ships them to each pre-designated house site with masonry ends and dividing walls in place. The lower panels, with structural steel angles pre-affixed to the bottom sill, are set on
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the foundation wall. Holes are drilled through the angles into the concrete, and bolts with lead expansion shields are inserted and tightened.

Upper panels sit directly on the lower panels and are attached by gusset plates. Pre-fabricated wood roof trusses rest on the top of the upper panel, each one directly over a stud for concentric load distribution, and screw fastened to clip angles shopinstalled on the top track.

Completion time for each house is drastically shortened by utilizing prefabrication wherever possible. Aluminum soffits, doors and windows, stairs and banisters, kitchen cabinets and even closet shelves with poles are fabricated off-site with delivery to selected houses timed to coincide with their installation schedule. Off-site fabrication and timed delivery helps prevent pilferage, vandalism and damage, problems typical in open-tract building.

The Nehemiah Project has been widely publicized for its human interest appeal with emphasis on government land and money grants, low-interest financing and a revolving building fund initiated by and continued sponsorship from churches of many denominations. However, the use of prefabricated metal framing and many other preassembled building segments brought additional benefits to the people in Brownsville by lowering the requirement for skilled, on-site labor.

Thus, labor could be drawn from the local workforce, with virtually no training required, thereby creating jobs in a high unemployment area. This, coupled with pride of ownership, may turn this section of Brownsville into a community of homeowners who will endeavor to upgrade the surrounding educational and business facilities.

Wherever building modules can be standardized, prefabrication lowers the cost of lowcost housing.