Embodying a bold, fresh concept in bridge design and construction, the Hudson Hope Bridge in British Columbia was created by precasting a concrete bridge deck in 34 segmental box-girder units, hanging these units from the cable suspension system and post-tensioning the entire 680-ft. span. The deck units also function as stiffeners, comparable to steel stiffening trusses in conventional suspension bridges. The engineer notes that, “The concrete box-girder, because of its greater weight per foot and highly effective moment of inertia, can be made much more slender and graceful than any equally rigid steel stiffening truss.” Reinforced neoprene between deck units will relieve high moments if overloading should occur.

The structure won the admiration of the jury which said, “The ingenious design demonstrates attributes we look for in architecture. In its detailing, concept, and economical use of materials it is, indeed, a great work of architecture.”


Each of the 34 box-girder deck units was carried into position by a traveling sling which rode on the permanent cable system.

HARMONIOUS ASSEMBLY OF A BUILDING COMPLEX

Award of Merit

Medical Merchandise Mart
Precast concrete truss sections were assembled on steel tendons by means of a self-supporting monorail conveyor system, and post-tensioned to form a 2-story Vierendeel truss. As each truss was completed, the monorail assembly rig was removed and placed on top of the completed truss, and assembly of the next truss was begun. The unique structural system economically provides column-free floor areas, giving tenants maximum freedom for space planning.

Ingenious and imaginative structural design won a First Award for the 12-story North Carolina Mutual Life Insurance headquarters building in Durham, N.C.

Precast, prestressed concrete Vierendeel trusses comprise the entire exterior structural system of the building. Truss top and bottom chords and verticals were precast in separate units, trucked to the site, raised to working level, threaded on steel tendons, and post-tensioned.

Prestressed double tee floor units span in opposite directions on alternate floors so that each 2-story truss carries only one floor. Each truss cantilevers 33 ft at each end.

“The fresh attack of the concrete problem shown in the North Carolina Mutual Life Insurance building has great potential for the future,” commented the jury. “It represents an economy of effort we hope we’ll see further explored by architects.”

Arch.: Welton Becket & Assoc.; Assoc. Arch.: M. A. Ham, Assoc., Inc.; Eng.: Seelye, Stevenson, Value & Knecht; P/C fabr.: Concrete Materials, Inc.

Of the Medical Merchandise Mart in Lincolnwood, Ill., the Awards jury said, “An excellent solution using the basic alphabet of prestressed concrete done in full command of the building’s proportions, scale, details, and relationships. Here is a harmonious assembly of the many component parts and units of a building complex resulting in considerable harmony with the landscape in a unified total composition.”

The architect’s solution provides two levels of column-free display areas with an entrance at a level midway between the upper and lower floors. The spacious, open entrance lobby removes the “basement” stigma from the lower display floor. In addition, the building is supported on precast concrete pedestals so that light can be introduced into the lower display area.

- The structural system is precast, prestressed concrete, using standard manufactured sections available on a competitive basis in the area. Window sections are load-bearing precast concrete.

PURE EXPRESSION OF STRUCTURAL ELEMENTS

AWARD OF MERIT

Automobile Club of Southern California

The jury described the Automobile Club of Southern California in Beverly Hills, Calif. as "a pure expression of all structural elements and their function both on the exterior and the interior. Prestressed concrete single tees and tree forms, as well as long-span elements, are carefully correlated. They express themselves as an architecture of their own."

Prestressed concrete was selected as the basic structural material because it could provide column-free interior spaces, rapid and relatively economical construction, ease of future expansion, a variety of forms.

Arch.: Welton Becket & Assoc.; Eng.: Stacy & Meadville; P/C fabricator: Rockwin Prestressed Concrete Corp.

STRaightforward Articulation of P/C Units

AWARD OF MERIT

S.A.E. Fraternity House

The Awards jury felt that the Sigma Alpha Epsilon fraternity house at the University of Florida in Gainesville, Florida was "a straightforward articulation of prestressed concrete units. It shows a variety in the play of light and shadow and in texture and surface not ordinarily associated with prefabricated component parts."

The design demonstrates a successful application of an exposed precast, prestressed concrete structural frame composed of standard plant-produced units. The architect notes that the construction cost of $9.30 per sq. ft. compares most favorably with an average cost of $16.50 per sq. ft. for the same type of building of conventional construction in that area.

Arch.: Gene Leedy; P/C fabricator: Prestressed Concrete, Inc.
Reflecting the Science of Prestressing

Award of Merit

Ventura Savings and Loan

Discussing the Ventura Savings and Loan Association building in Buena, Ventura, Calif., the Awards jury said, "Satisfying in its whole proportional relationship. A well-balanced piece of construction, reflecting the science of prestressing. It makes a very strong visual statement as a symbol of strength, accomplishing the architect's and client's objective."

Exposed surfaces of the prestressed concrete structural members help to create an elegant and disciplined interior. The bush-hammered surfaces of the roof girders accentuate the fine, smooth surfaces of the concrete.


Forthright Expression of Single Tee Shape

Award of Merit

MacArthur/Broadway Office Building

Reviewing the MacArthur-Broadway Office Building in Oakland, Calif., the jury said, "The prestressed single-tee shape is used in a composition that carries its rhythm throughout in a forthright expression."

The architect, discussing the project, said, "The design is the result of extremely close cooperation between architect and structural engineering consultant to such an extent that there is no easily identifiable area of demarkation separating structure from architecture."

Using prestressed concrete, the architect created an open plan; the only element within the rentable space is a stair shaft required by codes.

Arch.: Irving D. Shapiro & Assoc.; Eng.: T. Y. Lin, Kulka, Yang & Assoc.
FRESH FORMS IN BRIDGE DESIGN

AWARD OF MERIT

Columbia River Bridge

“This bridge brings fresh forms into the concept of bridge design in North America, and employs the full technology of fabrication, lifting, and erection. It has a rough beauty of its own,” remarked the jury about the Columbia River Bridge near Kinnaird, B. C., Canada.

Prestressed concrete girders of variable cross-section, each weighing more than 100 tons and spanning between piers, were stressed in three stages during construction.

Eng.: Choukalos, Woodburn & McKenzie Ltd. with Prof. R. Morandi; P/C fabricator: Con-Force Products Ltd.

COMPLEMENTING THEIR SETTINGS

AWARDS OF MERIT

Commenting on the MacKinnon Avenue Overcrossing in San Diego, Calif., and the Vicente Creek Bridge near Monterey, Calif., the jury said, “Refined, clean-cut bridge structures. Very simple, straightforward, controlled uses of prestressed concrete. These bridges contribute to automobile travel without marring the landscape and, in fact, complement the settings.”

Eng.: California Division of Highways; P/C fabricator (Vicente): Delta Prestressed Concrete, Inc.

Prestressed concrete was selected for these bridges because of its low maintenance cost and durability, and the simple beauty of the resulting design. I-girders were chosen for the Vicente Creek Bridge (right) because a light, airy superstructure was desired to contrast with the bold, rugged substructure needed to harmonize with the harsh beauty of this steep, almost inaccessible canyon.

A steel launching truss was fabricated on shore and rolled on tracks across the bridge in stages carrying a girder inside.

WINNERS IN PAST PCI AWARDS PROGRAMS dramatize the wide latitude in design and application possible with prestressed concrete. This extremely versatile material contributes to truly creative architectural and engineering expression bringing, at the same time, a number of important practical advantages to owners.
Examples of past winners of AWARD OF MERIT plaques


FIRST AWARD WINNER
1963
St. Richard Church
Canada
This Montreal, Quebec church is constructed entirely of precast, prestressed concrete single tees which were employed in floor, walls, and roof and to create a bell tower of unusual beauty. Ends of the single tees were altered in manufacture so wall and roof members interlock. The Awards jury, in recognizing this ingenious use of standard prestressed concrete shapes, said, “Here is a building in which the architectural and engineering concepts were one and the same. Not only does this church have unity and coherence, it also has a scale and humanitarian feel that is properly developed.”
Arch.: Maurice Robillard; Eng.: Jean Duchesneau; P/C fabricator: Francon Ltd.

FIRST AWARD WINNER
1964
Phoenix Convention Center
The 1964 Awards jury commented, “Here is an excellent example of a design which is entirely functional, yet achieves a striking appearance. Obviously the architect did not have a simple problem. He had to consider the diverse uses of space, the environment, cost factors, acoustical requirements, and so on. The building has elegance and unity and is true to its purpose and environment.”

Prestressed concrete double tee shapes radiate out from the center, supported by an outer compression ring and an inner tension ring, creating the dramatic 180-ft. diameter clear span roof system. The roof members cantilever at both ends beyond the rings, permitting continuity in bending. Precast concrete columns, 34 ft. high, support the roof load at the building perimeter. The intermediate floor of the Center is a 12-in. post-tensioned, cast-in-place slab spanning 30 ft.