G. FOX AND COMPANY PARKING GARAGE AND MUNICIPAL PARKING GARAGE *

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HARTFORD, like so many other cities, has a big headache with its parking problem. The lack of parking facilities in the downtown shopping area is the foremost complaint of the people in the Greater Hartford area.

A survey made by the Hartford Redevelopment Agency in December 1951 estimated that the total ten-hour vehicle traffic stopping in the Central Business District was 40,000 vehicles and predicted an increase to 52,500 vehicles in 1970. Ten percent of this total is assumed to be pick-up and delivery, requiring curb stopping space or off-street loading but not parking space. The balance of ninety percent, or 43,700 vehicles, will need parking facilities. The number of parking spaces to serve 43,700 vehicles in 1970 was estimated to be at least 15,700.

This parking demand of 15,700 spaces compares with the expected 1970 supply as follows:

Curb parking	1,250 spaces
Off-street parking facilities expected to remain	6,450 spaces
G. Fox and Municipal Garages	1,650 spaces
Total parking supply	9,350 spaces
Demand requiring new parking facilities	6,350 spaces

The customer self-parking method of handling and parking cars is meeting with increasingly wider acceptance. A greater percentage of customers indicate their preference for this method because of their desire to drive their own cars and lock them while parked. From the management standpoint it is a preferred method also primarily because of operating economy in respect to labor cost and the reduction in number of claims from minor car damage which inevitably arise when cars are handled by attendants.

The opening of the G. Fox Parking Garage, located on Market Street between Morgan and Talcott Streets, just one block east of Main Street and the downtown shopping area, and the Municipal Parking Garage, located at 200 Church Street, just one and one-half blocks west of Main Street and and the downtown shopping area, was a tremendous step forward toward relieving the parking problem.

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The major objective in the designing of these two garages was not only to have a well-planned facility of large capacity but also to adopt the method of operation that would promote maximum use at the lowest possible parking rates. With this common objective it was only natural that both garages would have similar design features and facilities.

Both the G. Fox and Municipal Garages are of the open wall, continuous ramp or sloping floor type. These rectangular spiral ramps provide the equivalent of six floor levels, including basement and roof. This plan produced the highest parking capacity and provided the easiest parking of cars, compared with all other plans studied for these sites.

The parking of all cars is by the car driver—"customer parking." Floor attendants are used to issue tickets to the car driver upon entering the garage, to direct the driver to the available parking spaces and to collect paid tickets and check the car when it leaves the garage.

Both garages have a heated waiting room, office space, cashier's counter, public toilet facilities and an employees' locker room and toilets. All parking levels are served by automatic push-button elevators.

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The G. Fox Garage was designed by Abbot, Merkt & Company, Engineers, New York City, with Ramp Buildings Corporation, New York City, as Planning Consultants. The Contractor was Robert Glenn Builders, Inc. of New York City and Hartford.

The structure is of reinforced concrete with its foundations on rock. Typical column spacings are twenty-five feet three inches by thirty feet. The floor construction is of six inch wide joists and thirty inch pans fourteen inches deep. Joists are ten inches wide at the tapered ends. The entire floor system cantilevers out twelve feet from the center line of column. The floor slab is three inches thick plus one inch of monolithic finish.

The ramp or sloping floor section of the garage occupies about one-half of the length of the garage at the north end of each floor, the remaining portion of the floor area being level. Ramps are fifty seven feet six inches wide, having a gradient of five percent. The ramps accommodate two-way traffic with ninety degree parking on each side. The clear space between columns averages twenty-five feet two inches, allowing three car stalls per bay—each approximately eight feet four inches wide.

The structure is designed so that one additional floor level can be added in the future. The garage is one hundred and eighteen feet wide, three hundred and twelve feet long on Market Street and has a floor area of 35,135 square feet. Its capacity is 600 cars.

The contractors started construction in February 1953 and completed the work in November 1953. Cost was approximately $1,100,000.

The Municipal Parking Garage was designed by Daniel J. Tasillo, Supervising Architect, Department of Engineering, City of Hartford. Ramp Buildings Corporation of New York City were the Planning Consultants; A. John Macchi of Hartford was the Structural Engineer, and John P. Legnos Associates of Newington, Mechanical Engineer. The Contractor was B. Perini & Sons of Framingham, Massachusetts.

The garage is designed with a level floor area approximately in the center of the structure with ramp or sloping floor sections on the east and west sides of the level area. This makes it possible to have one-way traffic up on the east ramp and one-way traffic down on the west ramp with right hand turns —a most desirable feature to attract the women shoppers.

The garage has entrances and exits on Church and Ann Streets and provides for a future entrance and exit to a service street of the East-West Highway when it is constructed.

The structure is of reinforced concrete with caisson foundations which varied in length from twenty-two to fifty-eight feet. The bells of the caissons are on rock.

The foundations of the garage are below the foundations of the adjacent buildings. Investigation showed that the foundations of these structures were in unstable clay, had already settled and some walls of the buildings were badly cracked. Removal of any lateral support could have been serious. A variety of protection methods was designed and installed by Cookley & Booth of New York City.

A heavily loaded five-story warehouse was underpinned with twelve and three quarter inch pipe cylinders jacked down open-ended through the clay to a hard pan layer eighteen to twenty-five feet below the surface. The cylinders were then cleaned with pancake auger, bar and orange-peel bucket, and the empty shells tested at sixty tons each for two hours. The cylinders were then filled with concrete and after setting for a day, "load tested" to a sixty-ton capacity with Watson-Stillman pumps and jacks. The jacking pits were then filled with concrete to form a thirty inch continuous cutoff wall.

A five-story hotel with brownstone foundation walls was underpinned with plain concrete to take the wall loads to safe bearing below the garage subgrade.

Inter-pier underpinning, alternate plain concrete piers, designed to give a bearing capacity equivalent to one hundred percent of the original foundations, with three inch by ten inch creosoted wood sheeting installed horizontally between the concrete piers, was used to support a one-story building.

A four-story industrial building was protected with a cutoff wall of steel soldier beams and horizontal wood sheeting.

Check levels and offsets run during the underpinning operations showed no perceptible movement of the structures. Temporary canvas tenting over the area of the underpinning allowed the work to continue uninterrupted during a very wet spring season.

Typical column spacings in the garage are twenty-seven feet six inches by thirty four feet. Clear space between columns averages twenty-five feet nine inches, allowing three car stalls per bay—each approximately eight feet seven inches wide.

Ramps are sixty feet ten inches wide, having a gradient of five percent accommodating one-way traffic with ninety degree parking on each side.

The floor framing consists of concrete slabs, beams and girders of continuous design and the entire floor system cantilevers out twelve feet from the center line of column. The floor slabs are four inches thick, plus one inch monolithic finish. All beams are thirteen inches wide, twenty-four and one-half inches deep, spaced nine feet two inches on centers, giving a clear span of eight feet one inch between beams. The girders are all twenty-eight and three quarter inches deep with varying widths to satisfy loading.

The entire framing system was designed to simplify the construction, erection and stripping of the concrete forms and to utilize full four by eight sheets of plywood with one-half inch clearance at the beams. The beams being of uniform size were formed with fourteen gauge sheet metal and placed between the plywood panels. These steel beam forms were made from five foot full width sheets to eliminate cutting.

The Contractor re-used the metal beam forms as many as twenty times and states that this simplified forming system was responsible for the low cost of the structure.

The caissons were designed to use 2,000 P.S.I. concrete while the remaining structure was designed to use 3,000 P.S.I. concrete, except for a few highly loaded columns on the lower floors which required 3,750 P.S.I. concrete. The use of Celite C-4-C, a diatomaceous admixture, manufactured by the Celite Division of the Johns-Manville Products Company, which has pozzolanic and air-entrainment properties, increased the workability and durability, making it possible to use a five and one-half bag mix for 3,000 P.S.I. concrete and giving a twenty percent field margin over the laboratory tests.

The floors were designed for a live load of 80 pounds per square foot, while the roof was designed for a live load of 100 pounds per square foot. The roof deck has a membrane waterproofing over the structural slab and a one and one-half inch reinforced concrete finish.

The basement area is ventilated by propellor type fans mounted on top of a concrete shaft located in each corner of the structure.

Fluorescent lighting is used at the entrances and the center area of the first floor. The entire ramp lighting is arranged so that it can be controlled in one operation.

The ceilings of the entire structure are painted an off-white, all columns are painted a brick red and the walls of the basement and first floor are painted a gray blue. The color is attractive and makes the garage an inviting place for women shoppers to park their cars.

The garage is three hundred seventy feet long, one hundred eighty-seven feet six inches wide. The basement and first floor have an area of 58,350 square feet. The second, third and fourth floors and the roof have an area of 59,700 square feet each.

The garage has a capacity of 1,020 cars.

The Contractor started work in April 1954 and had 600 parking spaces available for use on the first of November, and completed the work in January 1955. The cost of the structure was $1,558,000.

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Thus Hartford has taken its first step forward in solving one of its major problems—that of providing available parking spaces in the downtown shopping area.