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Trevi Park: Automatic Parking System

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TREVI PARK - AUTOMATIC PARKING SYSTEM

THE NEED

TreviPark is an underground, multi-story stacking system that holds cars efficiently, thus reducing the cost of each parking space, as a fully automatic parking system intended to maximize space utilization in parking structures. TreviPark costs less than the price of a conventional urban garage and takes up half the volume and 80% of the depth. Using a silo structure, preferably underground but possibly in elevation, the system provides automatic parking of vehicles with a controlled and secure deposit and retrieval area. Drivers leave their cars in a parking lane that serves as a loading-pick up point, and vehicles are automatically transported to a parking bay. The circular design offers the engineering efficiency of unbraced constructions, with associated shorter construction time and lower costs than rectangular structures. Since the vehicle is not running when being stored, TreviPark uses only one third of energy required to ventilate a conventional garage.

THE TECHNOLOGY

TreviPark is applicable in dense urban areas or in special circumstances which limit parking on grade or in elevation.

FIGURE 1 CONCEPTUAL DESIGN

The system reportedly reduces the cost of each parking space by holding cars efficiently; the use of vertical elevators rather than ramps and driving lanes permits optimum storage capacity and reduces land needs. Heating, air circulation, and lighting costs are minimized, as all patron activity is above ground in the service.

TreviPark fits into a 72'-diameter circle and holds 12 cars per floor, accommodating between 72 and 108 cars, with a surface impact of only two parking spaces and one kiosk. A surface kiosk, which provide a sheltered and secure waiting area during retrieval, is designed to enhance surrounding architecture and open space. Retail or other public services can be incorporated into the design of the kiosk. Parking takes place automatically, without the driver on board. The patron simply drives the car into a parking lane that serves as the loading pick-up point, turns the car off and leaves. The car is then conveyed into the cylindrical structure by an elevator that automatically transfer the car to a safe dock. The driver receives a magnetic card to retrieve the vehicle and to pay for its storage. Total cycle time for retrieval takes between fifteen seconds and one minute, based on vehicle location within the circular garage.

FIGURE 2 GARAGE INCORPORATED AS FOUNDATION OF AN APARTMENT BUILDING

BENEFITS

- Reduces land usage - conveying the vehicle by a vertical elevator rather than using sloped ramps and driving lanes.
- Permits optimum storage capacity - using 220 sq. ft. per parked car compared to 400 sq. ft. per parked car in conventional garages.
- Accommodates all sizes of cars, light trucks and sport utility vehicles - a special system can be designed to accommodate trucks and buses.
- Minimizes environmental impact because 80% of the surface circumference can be landscaped.
- Can be built in tight areas, near existing buildings and beneath or within new constructions - the circular design can serve double duty as part of the foundation system for above -grade office, hotel and residential projects.
- Preserves historical centers, green spaces, courtyards, urban street and boulevard - no ramps or open cuts to degrade the visual environment.

- Precludes scratches and dents because vehicles are isolated from each other.
- Guarantees security and uninterrupted operations - featuring a 24-hour central control station.
- When designed under a proposed building, it generates savings in the foundation cost since the parking structure can be designed to be load bearing.

STATUS

At the present time Trevi Icos Corporation have four parking systems in operation; two in Cesena, one in Milan and one in Rome, all in Italy and also have three under construction in Italy and two under contract in Belgium and England.

BARRIERS

Initial cost is relatively higher than traditional parking system, but the cost can be offset by lower operating costs.

POINTS OF CONTACT

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REFERENCES

Civil Engineering Research Foundation (CERF), Civil Engineering Innovative Technology Evaluation Center (CEITEC), <http://www.cerf.org/ceitec/eval/ongoing/trevi.htm>

REVIEWERS

Peer reviewed as an emerging construction technology

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