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Traverser: is the main internal parking mechanism.

It transfers vehicles between the entrance(s) and the static parking bays (called cells). These consist of a carriage which moves laterally along the length of the parking structure via rails mounted to the floor.

It moves vertically and laterally simultaneously within the system.

Movements are done by 2 electro-mechanical motors engaging conveyor belts.

One traverser per 50 cars is a standard recommendation.

Cells: are the spaces where vehicles are stored otherwise known as car parking bays.

These can be arranged in a wide range of configurations depending on the individual specifications of each site, access and available space.

The heights of each row of these can vary depending on the demand for different heights and types of vehicles intended to be parked.

The only moving parts are conveyor belts that perform the car movements.

Garages: where people interact and move within the system.

These provide the access and egress points for vehicles at the designated level.

The driver leaves and retrieves the vehicle from this location after activating the process via the customer interface.

The Virtual Garages are similar to a typical garage in appearance but has conveyer belts and wheel guides set in it.

There can be multiples or one per system with integration of lifts and turntables as the project requires.

Fully Automated

Robotic Car Parking System

Site Specific Considerations

Additional Elements include:

Turntables

Lifts

Entry Points

Traffic Management

Road Access

PLC Software Interface

Users of the system

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GENERAL ARRANGEMENT

Area Requirements

Length (plan view) calculated by using Cells @ 2.5m centres plus 3m clearance (1.5m each end) for Traverser, Width is 2 rows @ 5.5m plus 6m for Traverser, with preferable 0.5m each side for maintenance, overall width 18m. 60 Cell 5 high system then is Number of Cells x 2.5m + Traverser overrun (6 x 2.5m) + 3m long = 18m x 18m wide.

Max Height = (2.2m x 5 levels) + 0.3m for floor maintenance[1] (with sunken Traverser) = Max Column height currently of 11.3m.

Note:
1: ALL DIMENTIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN
2: THESES DIMENTIONS ARE TYPICAL AND CAN CHANGE DUE TO VEHICLE SIZES AS REQUIRED BY LOCAL BUILDING CODES
3: ONLY THREE LEVELS OF PARKING LEVELS SHOWN

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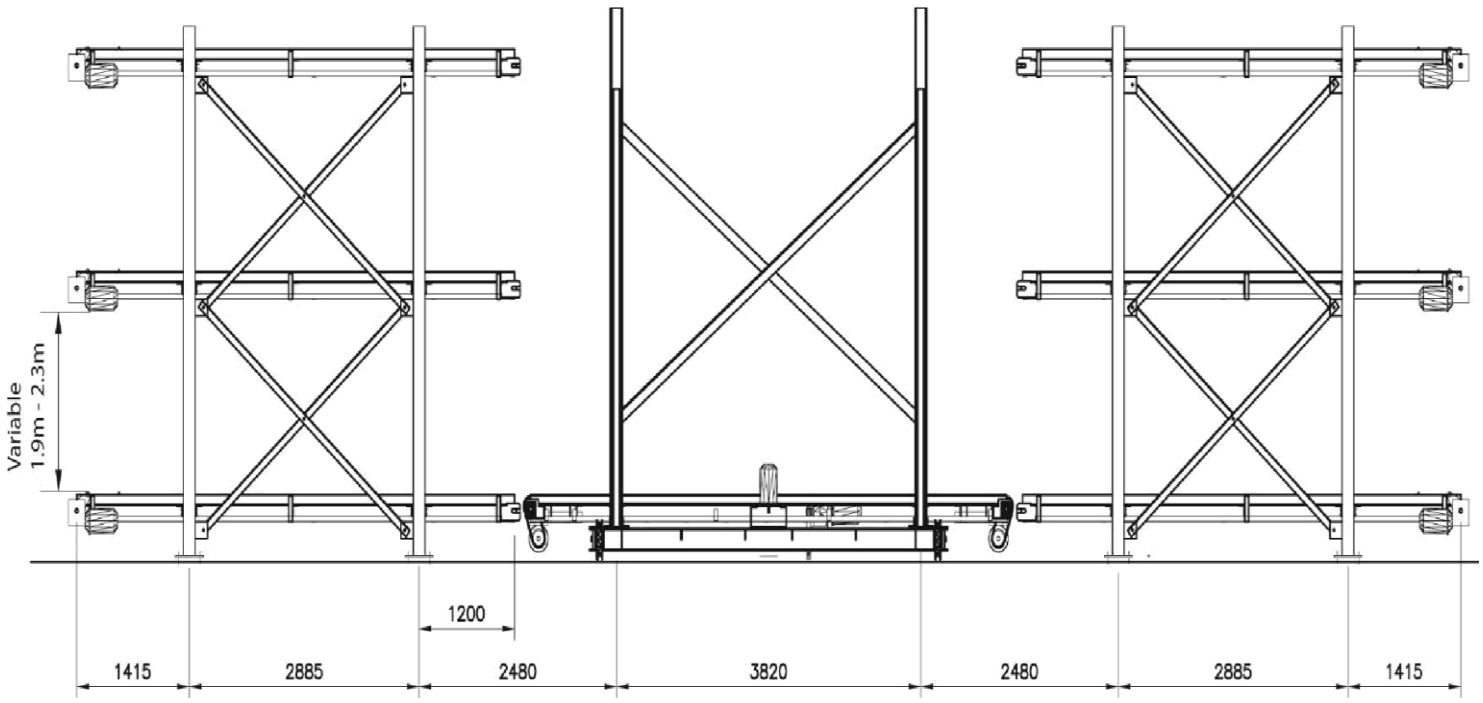
GENERAL ARRANGEMENT



End Elevation View

Note:
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3: ONLY THREE LEVELS OF PARKING LEVELS SHOWN

Cell (Car Bay) Size

Width 2.5m (vehicle max internal clearance 2.3m).

Overall length 5.5m .

Overall clearance height variable between 1.8m - 2.2m (height can be adjusted to suit individual client requirements).

Internal clearance height variable between 1.6m – 2.0m (height can be adjusted to suit individual client requirements).

Traverser

Width 4.5m (vehicle max internal clearance 6.0m for cell platform).

Overall length 4.1m.

Overall clearance height 9.1m.

(height, variable depending on number of levels)

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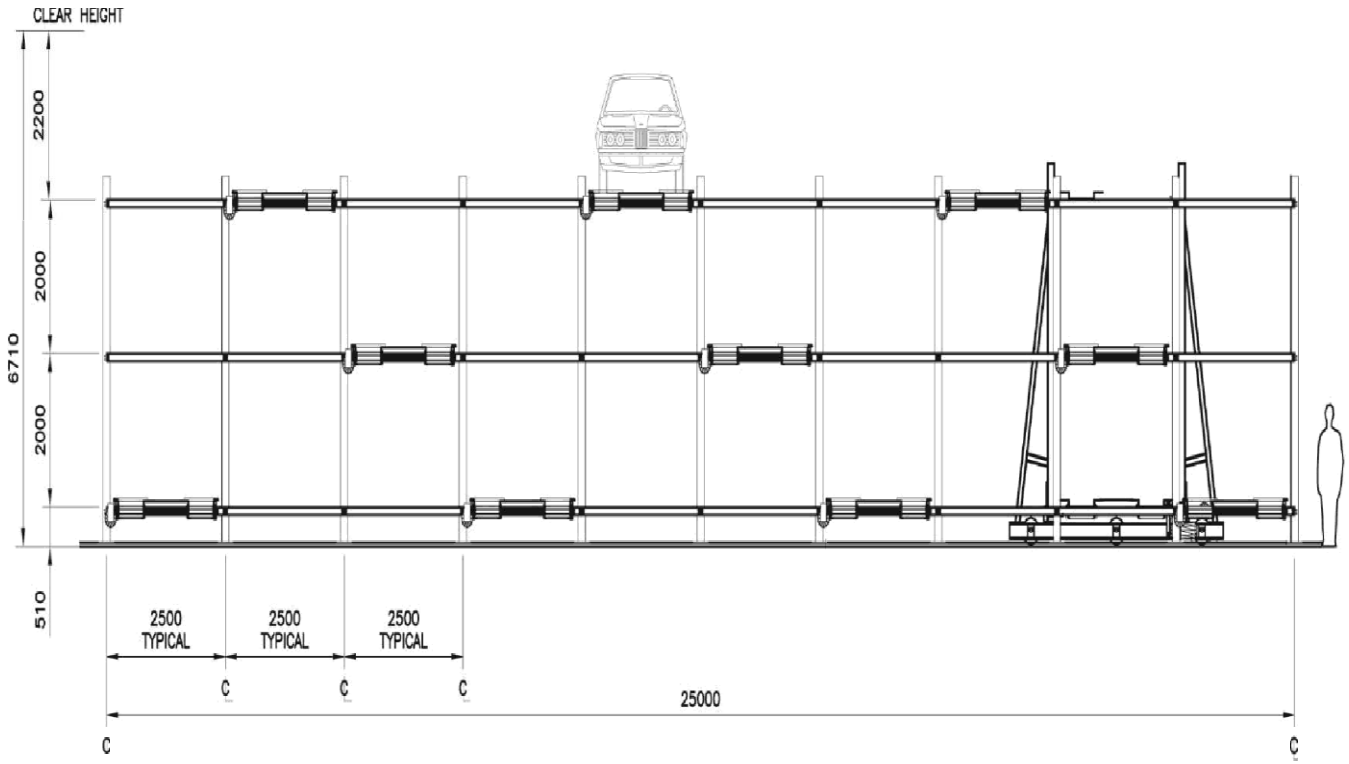

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Loading Time of System

Step	Description	Time
1	Vehicle approaches system, activates door	0.00
2	External door opens	3.00
3	Vehicle enters garage, turned off, & secured (External door closes)	30.00
4	Patron leaves garage	10.00
5	Patron activates system (card,key or ticket)	5.00
6	Inner door opens	3.00
7	Vehicle moves forward onto traverser	10.00
8	Traverser travels to appropriate park (At same time as traverser moves, inside door closes This allows steps 1-5 to occur while traverser continues automatic transfer of previous vehicle)	23.70
9	Vehicle moves from traverser to garage	10.00
10	Traverser either parks awaiting instruction or returns for next vehicle to park	23.70

Unloading Time of System

Step	Description	Time
1	Patron returns to garage and activates system (either card, key or ticket)	0.00
2	PLC identifies signal and moves to retrieve vehicle	23.70
3	Vehicle moves from park to traverser	10.00
4	Traverser returns to out garage (as traverser approaches internal door will open unless there is still a vehicle in the garage-if so traverser will queue	23.70
5	Vehicle moves from traverser to outfeed garage	10.00
6	Internal door closes (if installed, turntable rotates vehicle to face exit add 10 seconds)	3.00
7	Access permtted for patron to enter vehicle	15.00
8	External door opens	3.00
9	Patron & vehicle leave outfeed garage	20.00
10	External door closes	3.00

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ENVIRONMENTAL IMPACT

The AUTO-PARK system offers a parking solution with minimal impact on the surrounding environment. Significant effort has been undertaken to ensure the system is energy efficient, uses minimal space (when compared to conventional parking), and is predominantly made from materials which are recyclable.

Lighting: minimal for maintenance requirements.

Solar, Battery or Diesel Generators are alternative options.

Lighting for public access areas only needed eg. Garages, public walkways, foyer and access points.

Noise Pollution: 68dB means rating when tested in operation at Rotorua Airport.

No hydraulic or pneumatic components in its operation.

Uses Variable Speed Drives (VSD) and electromechanical technology.

Reduced Air Pollution: cars are not running within the system, eliminating expensive extraction systems and toxic gas build up.

Energy Requirements: calculated to number of traversers required.

When idle the system draws no power and is in total darkness.

Starting electrical requirement is 150 amps with continuous use going down to as low as 60 amps.

No internal lighting, lifts or ventilation units needing power.

Sub-station required specific to the system and site requirements.

Power generation can come from Mains, Solar, Batteries or Diesel Generators or used as backup alternative power generation to operate the

Multifunctional: construction below a building, above a building, beside a building or in a building.

Has a broad range of product design and functionality.

It is aesthetically pleasing meeting client and council requirements.

No unsightly look of conventional concrete parking.

Road access and traffic management are considerations.

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