



Car Park Design - The Devil is in the Detail

Introduction: *As with all projects where design teams have only very occasional assignments, there is a tendency to have to start at the bottom of the learning curve every time. Most professional practices in Ireland only ever get to design one or two large-scale public car parks and so the lessons learned are not carried forward.*

Most public car parks and many large private car parks now employ automatic car park control systems - usually Pay-on-Foot systems rather than the historical Pay-at-Exit systems. This and other modern technological developments have resulted in alterations to the design requirements of the car parks.

Bicycles: Cycle parking in public car parks needs 100% segregation, and cyclists don't dismount and so pose hazards to both themselves and everyone else in the facility. Cyclists don't like using public car parks for this same reason and so usage of cycle provisions is almost nil.

Column Centres: In a modern car park there should be no columns to impede access to parking spaces. In basement car parks this is difficult but not impossible to achieve. Where the standard 7.2m grid is used, designers need to recognise that the notional advantage of allowing for three spaces, each of 2.4m width between column centres, is lost once real columns (400 x 400) are inserted - the space is reduced to 6.8m. Designers should allow for 7.2m (or other multiples of 2.4m) clear between column edges so that full width spaces are available to patrons.

Head Clearance: Flat ceilings are preferable in all car parks. Structural beams should not be located in the vicinity of parking spaces, and if this cannot be avoided then allowance must be made not only for the height of car roofs but also for the height of hatchback doors which swing up.

Intrusions: Where ramps intersect with floors at parking spaces, the design needs to ensure that tall pedestrians don't risk cracking their skulls, or that tall vehicles don't have their roofs removed. Plinths that catch opening car doors or walls that protrude into circulation pathways are design challenges and should be eliminated.

Number of Lanes: Most car parks of up to 500 spaces require only one entry lane - possibly with twin ticket dispensers - as they usually face a pinch point which effectively means that only one line of cars can actually navigate 20 metres after the entry barrier. A minimum of 2 exit lanes are required at all automatic car parks, to allow for the patron who loses their ticket and blocks a lane while staff deal with them.

Lifts: 13 person lifts are increasingly essential if any reasonable comfort is to be provided, and these need to be in pairs. Smaller lifts do not meet the needs of people with shopping trolleys or baby buggies or large bags/packages.

Lighting Standards: Old recommendations on internal lighting standards e.g. of 50 lux, have long ago been discarded by the industry and replaced by minimum standards of 100 lux and 250 to 350 lux at entrance/exits. White fluorescent bulbs provide the best quality of light. Tungsten lamps generally give yellow tints and leave "cave" effects unless used in high densities. Lighting in stairwells and lobbies need to be to a very high specification to minimise perceptions of personal isolation.

Lines of Sight: Personal security is greatly enhanced in car parks where lighting levels are high and clear lines of sight are designed into a facility e.g. at access points to lift lobbies, stair lobbies, at corners on pedestrian routes. In addition all doors, including lift doors, should have large glass




panels, all walls should have large glass windows so patrons can check whether it is safe to pass through or not. Structural walls can have 'openings' cut into them, to increase natural light penetration and improve sight lines.

Main Lobbies: The main lobbies of public car parks need to be sufficiently large and well laid out to accommodate the very large peak flows of patrons from lifts, stairs and ground floor areas, who are going to/from their cars and stopping to pay for their parking at pay stations or customer service desks. In addition, the area should allow plenty of room for vending machines, public phones, seating areas, litter bins and appropriate signage.

Office/Kiosk: Modern car parks require proper accommodation for staff including canteen, toilets and lockers in addition to the CCTV, PC & printer, intercoms, safe, supply stores, customer service window, phone/fax, wet/dry cleaning room, ticket storage etc. A minimum of 30 square metres is required.

Ramp Widths: Ramps in car parks need to be a minimum of 3 metres, to avoid collisions between ramp walls and vehicles. Tight turning circles need to be avoided.

Routes: Vehicular and pedestrians routes need to be segregated e.g. by painted walkways and separate signage schemes. Designs need to allow for wheelchairs immediately adjacent to lift lobbies and without a need to cross vehicle routes. Cul-de-sacs are a driver's nightmare, and should be avoided or minimised.

Scale: The size or capacity of a car park needs to be directly related to the likely peak demands for parking in the immediate vicinity of the site. Patrons will not normal walk more than 180 metres from their car to their destination.

Signage: Modern car parks should include significant provision for large illuminated signs for both pedestrian routes and for vehicular circulation routes. Provisional costing sums of £50 per space are minimal.

Space Size: The dimensions of spaces need to relate to the size of the vehicles expected to use the facility. The current standard of 2.4m x 4.8m spaces is quickly being overtaken by increases in car sizes and the increased use of long doors which require more room to open properly.

Stairs: In all car parks, there are significant numbers of patrons who refuse to use lifts, and so all stairs should be designed to a high standard to accommodate this, or should be alarmed and only accessible in the event of a fire.

Usage: Busy short stay car parks in provincial towns can have an average stay of less than 60 minutes, while average stays in Dublin City Centre car parks are 2.5 to 3 hours. This can result in average cars per space of 8 to 10 per day in Wexford or Drogheda, while in Dublin it can be only 3 or 4 cars per space per day. Good barrier systems can accommodate 200 to 250 cars per hour.

Vehicle Alignment: At car park entrances and exits, it is essential to allow sufficient room for cars to enter the lane and then align themselves with entry ticket machines. This usually requires that there be at least two vehicle lengths (10m) of straight lane in front of the barrier. Lanes should be only as wide as likely vehicles require, as overly wide lanes mean that drivers cannot reach ticket dispensers from their cars.

Liam Keilthy
Parking Consultant

Car Park Engineering Design –
Working Together for 'Win-Win' Solutions

Carpark design in Ireland today is of a very high standard, due mostly to co-operation between engineers and carpark operators. Most experienced engineers have worked on at least one project involving significant parking provision, whether

- in the basement of an office or apartment building or
- on the surface of a shopping-centre or business park or
- in one of the 60 multi-storey carparks located around the country.

In all of these, the team will have been aware of the recommended parking space dimensions for European cars of 2.4m x 4.8m. So how can it be that a modest family saloon will frequently fail to fit into the finished parking space?

The problem seems to be that design teams set out a column grid based on **centre to centre** distances that are multiples of 2.4m, e.g. 7.2m and then appear to forget the following:

- built structural columns are usually of large cross sections - 400 x 400,
- the grid layout forms the basis for the painters marking the spaces within a carpark and
- structural columns are frequently used as supports for vertical ventilation ducts or waste water pipes.

The built column dimensions reduce the actual space between two columns, for example, from 7.2m to 6.8m or an average of 2.27m, versus the 2.4m recommended. Figure 1

If the painting contractor follows the plans, he will lay lines along the centres of the columns. This results in two narrow spaces and one standard space in a typical grid. Figure 2

The failure of project managers to ensure that services are run down the back of structural columns rather than along the side, exacerbates this situation further. Many carparks have 300mm ventilation shafts or 150mm waste pipes, plus their protective guard-rails, intruding into the carpark space. Consultants increasingly require control panels and air-conditioning units for adjacent premises be wall mounted within the carpark structure. Figure 2 These panels/boxes protrude from walls and pose serious hazards to both vehicles and pedestrians moving in the affected space.

Cars are getting bigger, passenger doors are getting longer and there are more of them on the road and parking in carparks:

- a Jaguar XJ8 is 4.8m long and 2.0m wide with a turning circle of 11.5m
- a 230 Mercedes is 4.5m long and 1.72m wide with a turning circle of 10m+
- a typical '4 x 4' is 4.7m long and 1.9m wide with a turning circle of 11m+.

The owners of these, or indeed most cars, are reluctant to 'shoe horn' their vehicles into narrow spaces for fear of damaging these valuable assets. Also, both driver and passengers must be able to safely access their modern 'chariots'.

Design teams must therefore ensure that:

1. no columns are located in the vehicle circulation routes,

2. unavoidable columns do not reduce the space available to cars, i.e. there should be a minimum of 2.4m clear between columns,
3. no mechanical services intrude into the parking 'cube',
4. turning circles of larger cars are comfortably accommodated within the design.

Carpark design is a complex subject, and there are many similar issues to be discussed between the design teams and the parking professionals. Most of the larger professional carpark operators will be delighted to contribute to your deliberations - but please get us involved early!

One Parting Thought:

> Sqeezing that **one last space** out of a floor plan usually means leaving **all patrons** of that car park with navigation problems for **the life of the building.** In reality, that last space will seldom be used even in the busiest carpark!

Liam Keilthy
Parking Consultant

Turning Circles at Public Car Park Exits

The number of new car parks that have opened to the sound of jackhammers removing plinths at exit-barriers are now too numerous to mention. Some design teams appear to have lost sight of the basic fact that car parks are intended to be used by people driving cars!

Modern car park technology involves the use of encoded tickets to activate automatic lane barriers. A drivers must align his or her car into the exit lane close enough to the ticket reader mechanism in order to enter or to exit. This process requires that the car be straight before the driver reaches out to insert the ticket into the reader.

In modern car parks, the typical building structure covers the whole site, and the exit is directly at the building line. Internal circulation patterns in these designs tend to leave only one car length for the turning manoeuvre. This leads to alignment problems and collisions with barrier equipment.

Car park operators would urge car park designers to give serious consideration to improved circulation and manoeuvring designs in preference to squeezing the last space into a structure.

Recommendation

At car park exits, we suggest that the minimum requirement be for a car to be straight onto the exit lane not less than two car lengths back from the exit barrier. This will allow the turning manoeuvre to be completed independently of the ticket processing stretch.

This recommendation will safeguard expensive control units which are usually located on central plinths, for example, when the in and out lanes are immediately adjacent. It will also reduce the potential for damage to vehicles from collisions with raised plinths, signs, etc., and improve customer satisfaction with the whole experience.

Liam Keilthy
Parking Consultant

Car Park Design: An Irish Perspective

The Republic of Ireland has a population of just over 4 million and has almost 1.3 million private cars up from 800,000 in 1990. The development of multi-storey car parks did not seriously begin until about 1980 and most of the 70 or so current purpose built public MSCPs date from the last 15 years.

The consequence is that the level of experience here with car park refurbishment is limited while the expertise in new design and build is considerable. This paper draws on this latter experience to highlight a number of issues affecting both new build and refurbishment projects.

The old adage about property location, location, location is as true of public car parks as it is of shopping centres or residential developments. In our annual customer surveys proximity to destination is by far the dominant issue in the parking decision. All other aspects of the car park, including design, are secondary to convenience, but this is no excuse for poor design.

I recommend that design teams include the following easy points in their design considerations:

The car park should be easy to find in the street network. Planners who insist that vehicle entries/exits to MSCPs are located off main streets are doing everyone a dis-service and should be challenged to prove their case.

Where entrances are hidden there is an absolute requirement for high visibility on-street signage taking motorists from the street directly to the car park entrance. Similarly for departing cars signage should lead them smoothly back to the main streets with clear directions to major landmarks or destinations to avoid dis-orientation.

The car park should be easy to enter and the "footprint" should be clear from the earliest possible point.

External signage should indicate where the entrance is and once at the entrance the control system should be self-explanatory.

Terms and conditions, tariffs, height restrictions, operating hours and the name/location of the car park should be clearly signposted at the entry point. Design teams refuse to believe the number of people who park in one car park and then return to another looking for their car only to discover that it is "lost"!

Navigation of the structure and location of vacant spaces should be easy for all motorists. Clear internal signage and floor markings directing cars to "parking" are fundamental but frequently neglected features of new car parks. I recommend the use of fluorescent lamps as directional aids eg along the spine of the decks. They should be installed lengthways while at crossing points/ramps (min. 3m wide), junctions etc,. and they can be at right angles to the traffic. The biggest challenge here is to convince structural engineers/developers of the merits of column free construction in car parks. Structural columns and mass concrete walls make a car park interior into a nightmare for many drivers.

Pedestrian routes, walkways, stairways, lobbies, lifts (min. 2 x 13 person) should all be easy to follow and use. It is easy to forget that for every car that parks in a facility there are likely to be twice as many pedestrian movements. These pedestrians are fragile compared to the cars they arrived in they may have young children, infants in buggies or hyper active teenagers in the party, or they may be older or mobility impaired (at a hospital they may be distracted, in pain or distressed); returning, they may have heavy shopping in bags or trolleys. All of these factors have to be considered. In half deck designs it is common to have lifts and stairs on one side of the structure only with the consequence that patrons have to navigate from one half deck to another and frequently this is done via the vehicle ramps.

Spaces have historically been 2.4m x 4.8m with disabled spaces 3.6m x 4.8m but as the bigger cars get bigger and 4x4s become more common the need to design for 2.5m x 5m spaces becomes more pressing. In our experience there is a strong case for marking all spaces with twin lines to encourage cars to park in the centre of the space. We have seen few cases of angled spaces (herringbone pattern) in MSCPs but the customers love them in surface sites!

A major issue for pedestrians is the impact of design on their sense of well being and personal security. It is easy to address many of the facets that impact on this lighting levels are critical, with a minimum standard of 100 lux at 1m now the norm. Lighting levels at lobbies and entrances/exit should be a minimum of 250 lux. The BS recommendations do the industry no service in this regard.

In addition, I recommend that all doorways be of clear glass so that patrons can see through the obstacle. Lift lobbies should be enclosed only as a last resort and then with glass filled walls/doors. Lift doors should be of glass. Stairways accessible to the public should be wide and bright. All pedestrian routes should be clearly signposted in both directions and levels should be clearly numbered.

Pedestrians returning to the car park should be able to locate the facility in the streetscape with ease and should be able to locate the pedestrian entrance from a distance. The lobby should be clean, clear and bright with no corners or alcoves where troublemakers might hide. The lobby should have close contact with the staff office and be overlooked at all times. Pay machines should be well-located and easy to access. Locating pay stations in small lift lobbies is a formula for disaster as coming and going patrons are placed in conflict. Design teams must create large open lobbies where numbers of patrons can congregate without feeling like they have been in a rugby scrum.

Patrons who have paid for their parking should be able to easily locate their car, access the exit route, complete the parking transaction and return to the road network with confidence. This requires a clear directional scheme for departing traffic and ideally this should be independent of the hunting routes.

There is considerable debate about the merits of internal finishes in public car parks. Whether floors should be painted, smooth or rough concrete finishes, slip proof tiles on stairs etc. I have concluded that floors should be tamped or stippled concrete with only pedestrian walkways painted. Painted floors are impossible to maintain to any high standard. Walls, columns, doors and ceilings should be painted and decorated to brighten the car park. Walls should be painted black to c 18 inches as camouflage soot marks from car exhausts.

To facilitate the smooth delivery of quality parking services it is essential that staff are well accommodated and that the main car park office is clearly visible from the entrance. I recommend that car park offices be of not less than 40 sq m to include customer service point/cash window, management station, intercoms, CCTV monitors, phone/2 way radio station, dry ticket storage, wet area for brooms etc, locker and canteen area with table, microwave, fridge, cupboards, sink, first aid, main electric board and fire boards, internal well ventilated toilet.

To conclude let me mention a number of issues which are emerging here in Ireland as elsewhere.

Bicycles in Public Car parks

In my view bicycles and cars and pedestrians in a confined space are a combustible cocktail. The scope for accidents between cyclists and either of the other two has to be considerable. The cyclist has the same parking decision as the motorist proximity to destination is the critical factor.

Except for staff in immediately adjacent buildings I do not see any benefit in insisting that public car parks provide cycle parking facilities.

Public Toilets in Public Car parks

Our experience is that unless the toilets are staffed and closely monitored they become magnets for a wide range of anti-social activity. A key controlled toilet operated in the way that many petrol stations do is an option.

Many of my UK colleagues will wonder at the absence of any mention of significant security measures in this article. Crime in public car parks in Ireland is very limited and CCTV installations etc tend largely to be management tools rather than security related investments. We are watching the evolution of the Gold and Silver award schemes with great interest and look forward to the day when all public car parks in Ireland and the UK will be benchmarks for quality customer service.

Liam Keilthy
Parking Consultant

The Vertical Challenge in Car Parks

Easy print format

Introduction: *Car park design teams face many trade offs, including a challenge between maximising the number of spaces in the new facility, and ensuring that it functions smoothly for drivers and their cars. To optimise capacity in a given spatial "cube" requires the maximum number of levels and consequently the minimising of floor to ceiling heights. Today the recommended clearance in a multi-storey car park is 2.1m.*

This approach sometimes to leads to people forgetting that cars are three-dimensional objects with height, length and width, and that, in addition, they are moving within the structure.

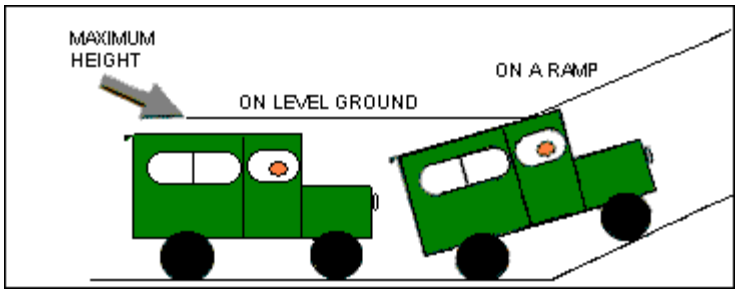
Absolute Height

All cars must be capable of getting through the entry under the height restrictor. In a single deck car park there are no significant height issues other than absolute height of the car. When ramps are involved a whole new range of issues arise.

On the basis that less than 1% of all private cars have engine capacities of more than 2.5 litres, it may follow that the height issue is small issue.

Length/Height

As cars move from the level up or down a ramp, the combination of length and height is key to whether the roof of the car hits the concrete ceiling or cross beams, or whether the bottom of the car scrapes floor at the top of the ramp.



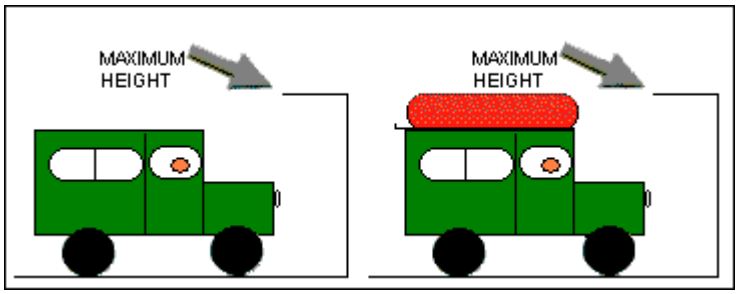
Load Factor

A car which enters a car park with a heavy load, down on its axles, and attempts to leave unladen, is likely to collide with a cross beam. A flatbed truck entering with a long ladder laid flat, but later repositioned so that it sticks out or up, may face the same problem.

Aerials

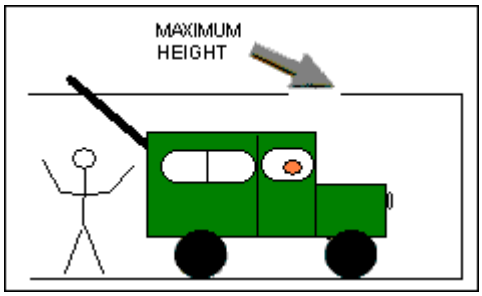
Cars with telescoping aerials can pose a problem – going in the aerial is down and nobody notices a problem. As the car leaves the driver switches on the radio and up goes the aerial to intercept the beams and trusses. Whip aerials get under the entry barriers and batter the light boxes and signs.

Roof-racks



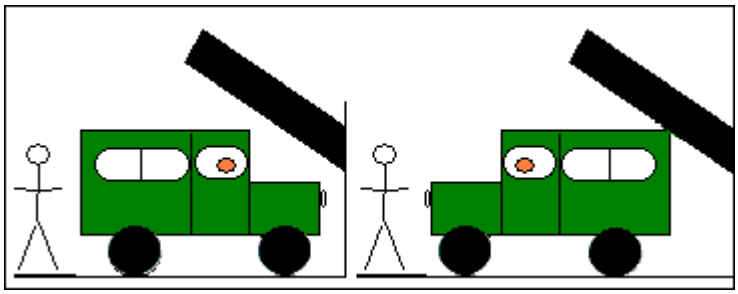
Many drivers forget that when they put a roof rack on their car that the height of the vehicle is increased. We have had all the lights in the car park entrance ripped out by drivers rushing to the shops before they leave on holidays. Bicycles stacked on a car roof pose the same problem.

Tailgates



Cars and 4x4s with tailgates that open up at the rear pose a problem because drivers forget that there is a ceiling above them! We have all had arguments with drivers who claimed that it was our fault that their tailgate was damaged when they had opened it and let it fly up into the ceiling!

Ramps/Low Spots



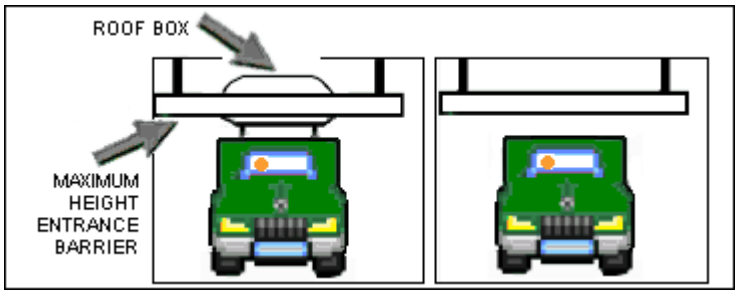
Most car parks have areas, e.g. under ramps, where cars can park provided the driver is cautious. Some spaces are perfect for cars that drive in but totally unsuitable for cars that reverse in. These spaces need clear warnings/signs for cars and people.

Driver Height

Surface Car Parks

Vehicle heights are an issue in surface car parks also. Tall vehicles can block the lines of sight for car park staff, and can offer vandals an opportunity to interfere with cars hidden from sight. We have banned panel trucks from several sites. If a surface site caters for tall vehicles – HGVs, buses etc., where drivers are positioned high above the road - there are issues of access, e.g. to get tickets, or to pay without getting out of the cab. Bewley's Hotel at Newland's Cross has a neat solution – an intercom mounted on a 10 ft high pole at both the 'in' and the 'out' barriers.

What to Do



The current practice is to place signs at the car park entrance stating the maximum height of vehicle permitted to enter. Many car parks also erect a restrictor at the car park entrance, which is set at the maximum permitted height. This can also be enhanced by a swinging board, which allows for contact between the car roof and the board with little fear of damage. This however does not address the issues posed by ramps, where the effective height is limited by the length of the vehicle. We recommend that a long high car be carefully driven through the car park and all height hazards identified and signposted.

Conclusion

99% of cars using public car parks do not have any height problems, provided the car park has indicated that there is a height limit, helped the driver assess the clearance under the height barrier and considered the height issues for long high cars at ramps. The onus must be on the driver to accept responsibility for their vehicles and to drive carefully within the car park.

Liam Keilthy
Parking Consultant

The Economics of Pay Car Parks

This is the text of a paper presented at the Irish Parking Association - 1998 National Parking Seminar Hudson Bay Hotel, Athlone on Friday 18 September 1998 by

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Introduction

Park Rite is Ireland"s leading car park management company, with over 20 years of experience in the design, development and operation of large scale public car parks. The companies origins lie in the development by Irish Life of the underground car park at Abbey Street(350 spaces), and later in 1980 the 1000 space Ilac Centre MSCP. Today the company manages over 5,000 spaces in 14 sites that range from Tallaght Hospital and Arnotts to surface sites in Bray and the city centre.

Hardly a week goes by without a call to my office from a local authority, a hospital, a shopping centre or a trade association asking the same question:

Would it be possible to develop a Multistorey Car Park in my town ?

To help formulate an answer to this question, I want to address three aspects of commercial car parking economics today:

1. Key Factors in the Commercial Success of Any Public Car Park
2. The Actual Numbers Involved
3. Some Important Ratios to Consider

1. Key Factors in the Commercial Success of Any Public Car Park

When I am asked to assess the commercial viability of new car park sites and the following are the critical issues I look at:

Priximity to Destination

Parking is a secondary activity, as people only park in order to do something else - shop, work, etc. Proximity to an attractive destination is the critical success factor in any car park project.

Location

Capital Cost

The cost of developing a car park includes the site, the structure, fitout and tax incentives where applicable. Modern MSCPs cost from £4,500 per space to £10,000 per space to construct ,depending on finishes and specifications but are averaging about £7,500/£8,000 per space, excluding VAT.Underground car parks are much more expensive, ranging from £10,000 to £15,000 per space. A surface site should not cost more than £2,000 per space to surface, light, mark, sign and fence.

Tariff

Price is critical to the revenue generation capability of any business and parking is no exception. Short stay parking has been repeatedly demonstrated to be price insensitive, provided it is not in competition with convenient free parking. Long Stay parking is very price sensitive, with people willing to trade off longer walking distances for lower prices.

Operating Hours

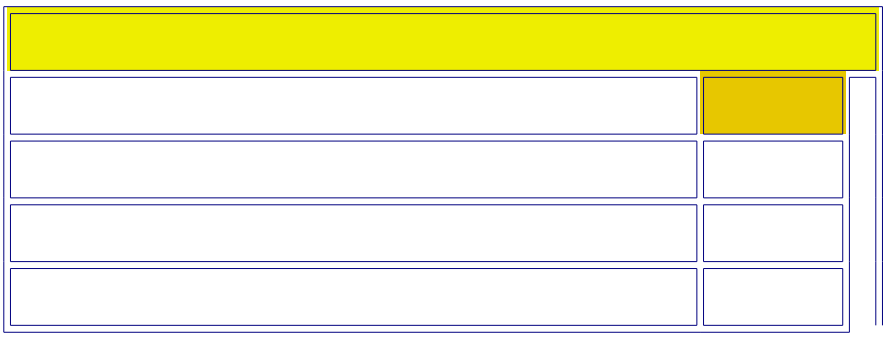
The operating hours of a car park must be tied to the needs of the local traffic generator(s) which it services, e.g. shopping centres, cinemas, theatres etc. As staffing costs are the largest single cost in the car park budget a balance must be struck between operating hours and these costs.Practical experience suggests that the car park needs to be open from about 1 hour before the centre opens until about 1 hour after it closes, and these hours need to be clearly posted throughout the car park.

Tax Status

Recent Urban Renewal initiatives have been extended to public multistorey car parks, but this scheme has now expired. Some designated area proposals may include MSCPs, and these should qualify for accelerated capital allowances, double rent allowances and rates remission, but these should be checked out in detail and with appropriate expert advice. The double rent allowances have the ability to make dramatic impacts on the value of a facility. Local authorities, charities and state institutions do not fall within the tax net and so do not qualify for these incentives, and until now have been deemed exempt from the VAT net also. This has dramatic implications for the finance of new car parks, as they are liable for VAT on the cost of the development but cannot recover VAT on inputs. They do not have to collect VAT on their receipts but do pay VAT on operating expenses. With VAT at 21%, the same car park yields c. 13% more for an exempt organisation than for a commercial organisation.

2. The Actual Numbers Involved

In this section I have outlined two illustrative models, one for a multistorey and one for a surface car park.



Operating Expenses	

Clearly the interest expense declines as the capital is repaid, so over the life of the investment the business will repay the £3.5 million.

In the event the investment was significantly higher than the £7,000 per space employed above eg in an underground or very high specification facility on a difficult/expensive site the economics would change.

Night-time business, if available in the car park catchment, can be an attractive source of incremental income, but typically offers low yields unless attached/adjacent to a leisure centre/area(a cinema complex, or an area like Temple Bar).

Most large car parks supplement their short stay parking with some long stay parking, either by a system of licenses or by setting maximum daily charges.

Operating Expenses	

A surface site of 500 spaces would occupy a minimum area of approximately 10,000 sq. m. and would have significant development value in the current property market. The footprint of a modern MSCP can be very small - less than 2,000 sq. m.(20m x 100m). The site costs can therefore be much lower than for a comparable surface site.

For local authorities or non taxable entities, it may be helpful to summarise the economics which would apply in this situation.

Summary	500 space MSCP	500 space Surface Car Park

VAT is not included in the tariff but is payable on the inputs. VAT is payable on the development costs and Corporation Profits Tax does not apply.

3. Key Ratios to be Considered

The key issue in the success or otherwise of a modern car park is the level of parking demand in the immediate area of the facility and this is determined by the proximity to a significant traffic generator eg a shopping centre.

In Ireland, car ownership levels are between 30-35%, and typical car occupancy levels of 1.2% or 1.3%. As a rough rule of thumb therefore a shopping centre of hospital with a footfall of, for example, 100,000 peple per week, could expect 25,000 cars per week.

Usage: Cars per Space per Day

A large space surface car park immediately adjacent to a large shopping centre in a provincial city has recorded parking use of over 10 cars per space per day. A similar car park located less than 500 yards away but serving the main street of the area has an average turnover of 5 or 6 cars per space per day. The difference is accounted for by the nature of the shopping -

- the first is a local convenience shopping centre where people drop in and buy small items every day. The average stay is less than 30 minutes per visit.
- the second site is used by comparison shoppers visiting several shops on each visit and only once or twice each week. The average stay is over 1 hour per visit.





Typical city centre shoppers' car parks have an average turnover of 3 or 4 cars be space per day and an average stay of 2 to 2.5 hours.

Occupancy: Hours Sold or Occupied versus Operating Hours

In the three cases outlined above, the average duration of stay is:

Combining these figures with the usage data above, and assuming 12 hour operation per day gives indicative occupancy levels as follows:

Many of the enquiries received at my office operate from an assumption of 70%+ average occupancies as the basis for new investment. This represents a highly exceptional performance in a pay car park, and needs to be thoroughly validated before proceeding with any development.

Building Efficiency

A well designed car park will have approximately 50% of total surface area devoted to parking spaces, and the balance devoted to circulation areas - roadways, ramps, pathways, stairs, offices etc. The revenue potential is related to the number of spaces, and the return on capital that this can sustain is based on the total cost per space built.

A basic space frame should cost no more than £4,500 per space, excluding site costs, while a cladded structure with good finishes inside and out will cost £7,000 +. An underground car park can cost from £10,000 to £15,000 per space to build.

Pay Parking Environment

To carry the costs of average car park developments, our experience is that parking charges need to be 60p per hour or better. Proposals to develop MSCPs in towns with large amounts of free or low cost parking, are doomed to very long pay back periods and probably commercial failure.

Our experience is that short stay parkers have no objection to paying for parking, and the impact in a town centre of introducing pay parking is to move the staff of the shops and offices off the streets and out of the centre. The effect of this is that parking for shoppers is greatly improved, to everyone's benefit. Increased usage of 50 to 100% is possible.

Scale

Our experience suggests that a 350/450 space car park is the ideal car park to operate, provided there is sufficient local demand. Large car parks - 600, 750 or 1,000 spaces are very complex units and cause all sorts of difficulties both internally and externally. The 1000 space Ilac Centre car park discharges cars at the rate of almost 600 per hour on a busy shopping day and this stretches the capacity of the local road network. This compares to the 500 space Parnell Car Park directly across the road which seldom experiences similar difficulties.

In smaller car parks, utilisation rates can be much higher than this if the local demand can carry it but this is exceptional. A 500 space MSCP in the centre of a large provincial town has been battling for years to get its occupancy levels above 25% except at Christmas, so size does matter!

4. Conclusion

I have identified the key factors involved in the success of commercial car parking, and by far the most significant one is **LOCATION**. Proximity to the ultimate destination is by far the most important factor in the parking decision - short stay parkers will not willingly walk more than 200m from their cars!

The economics of car parks are the same as for any business - the balance between revenues represented by volume and price and costs represented by investment, operating costs and taxation. A good car park can be very successful but a similar car park 200 metres away can be a dog!

Finally please make sure that the scale of any development is appropriate to the demand in the immediate area, and remember if in doubt, small is always better.