

# Traffic and Transport Assessment

15 King Street, Dandenong -  
Proposed Residential Development

V200337



Prepared for  
David Natale Design + Objects

11 December 2020

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## Document Information

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## Document History

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D01	02/12/2020	Draft Report	Maselusi Amiatu	Eric Kydd
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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

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# 1 Introduction

Cardno has been commissioned by David Natale Design + Objects to prepare a Traffic and Transport Assessment report for the proposed residential development located at 15 King Street, Dandenong.

This report provides an assessment of the statutory requirements related to car parking and bicycle facilities, as well as providing an assessment of the traffic impacts associated with the proposal.

## 2 Existing Conditions

### 2.1 Locality

The site is located on the north side of King Street in Dandenong (between Market Street and Stuart Street) as presented in Figure 2-1.

The site is currently occupied by a residential property, with a single crossover to King Street.

Surrounding uses are predominately residential to the north and west side, with the iconic Dandenong Market being directly opposite the subject site as well as the markets accompanying vendors.

Figure 2-1 Locality Plan



Source: Melways Online

An aerial photograph of the site and surroundings is presented in Figure 2-2.

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Figure 2-2 Aerial Photograph



Source: Nearmap (Dated 01 December 2020)

## 2.2 Land Use Zoning

The site is located within the General Residential Zone (GRZ) as presented in Figure 2-3.

Figure 2-3 Zoning Map



Source: VicPlan (01 December 2020)

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## 2.3 Road Network

### 2.3.1 King Street

King Street is categorised as a Council maintained road under the Vicroads declared map. It extends to the signalised intersection at Cleeland Street to the west and continues east where it ends at the roundabout intersection with Ross Street.

In the vicinity of the site, King Street is constructed with a single carriageway providing a traffic lane in each direction with car parking spaces line marked in each direction except areas that are signed 'No Stopping' within a 22m wide road reserve (approx.).

A 40 km/h speed limit applies to King Street past the subject site.

Figure 2-4 King Street, Dandenong Streetview



### 2.3.2 Cleeland Street

Cleeland Street is categorised as a Council maintained road under the Vicroads declared map. It is generally aligned in a north / south direction ending north at the Heatherton Road intersection and south at the Clowe Street intersection.

Cleeland Street has a road reserve width of approximately 20m and a signed speed limit of 40km/h within the vicinity of Dandenong Market.

Figure 2-5 Cleeland Street, Dandenong Streetview



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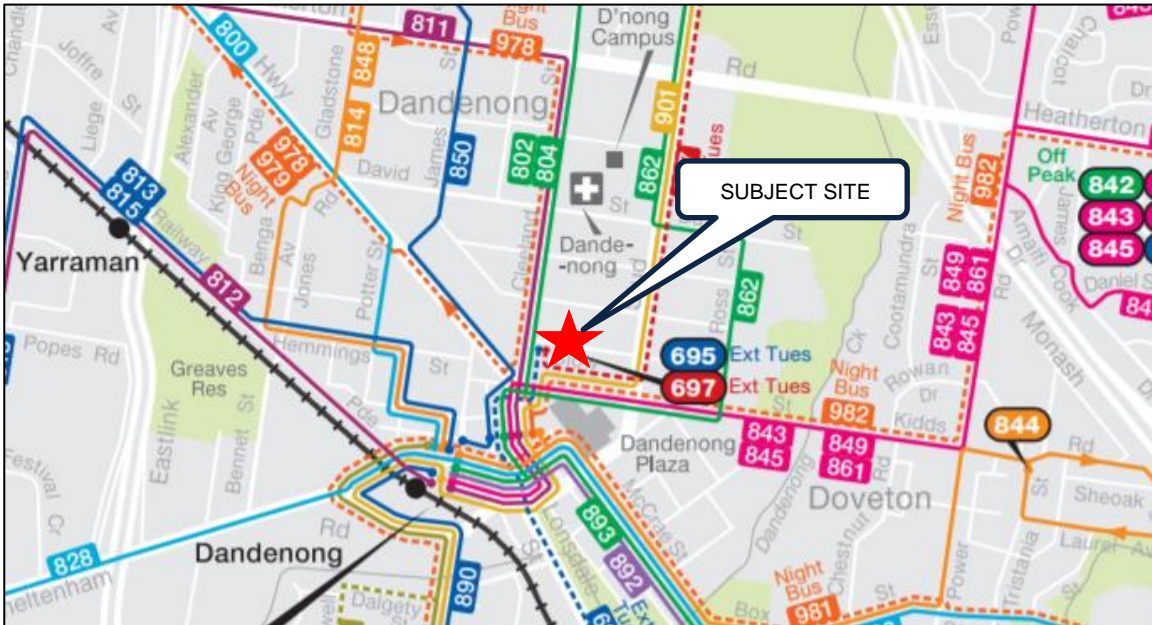
## 2.4 Public Transport Network

Bus route 843, 845 and 861 operate along King Street with stops approximately 150m-200m east of the subject site providing connection to greater Endeavor Hills as well as the Dandenong Railway Station.

Dandenong Railway Station is located approximately 1.5 km to the south-west of the site and provides metro train services on the Dandenong railway line and V/Line services

The existing public transport network surrounding the subject site is presented in Figure 2-6.

Figure 2-6 Public Transport Map



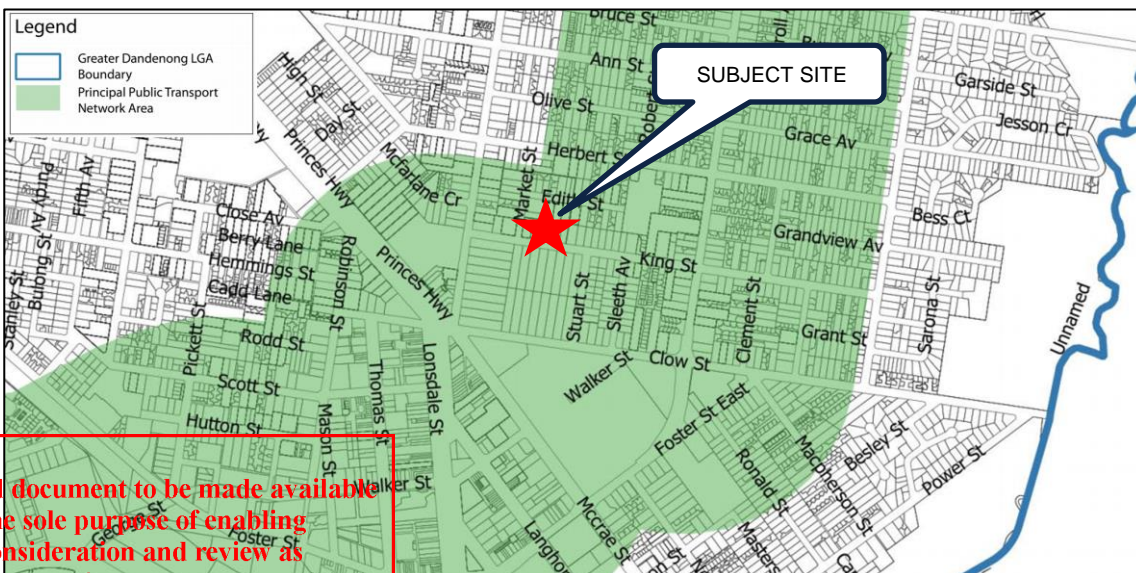
Source: PTV City of Hume Local Area Map

## 2.5 Principal Public Transport Network

The subject site is situated within the Greater Dandenong Principal Public Transport Network (PPTN) as indicated within Figure 2-7.

The PPTN is a statutory land use planning tool that supports integrated land use and transport planning by providing certainty to planners and the community about locations that are, or will be, served by high-quality public transport. It is designed to support integrated transport and land use planning, by encouraging more diverse and dense development near high-quality public transport to help support public transport usage.

Figure 2-7 Greater Dandenong PPTN



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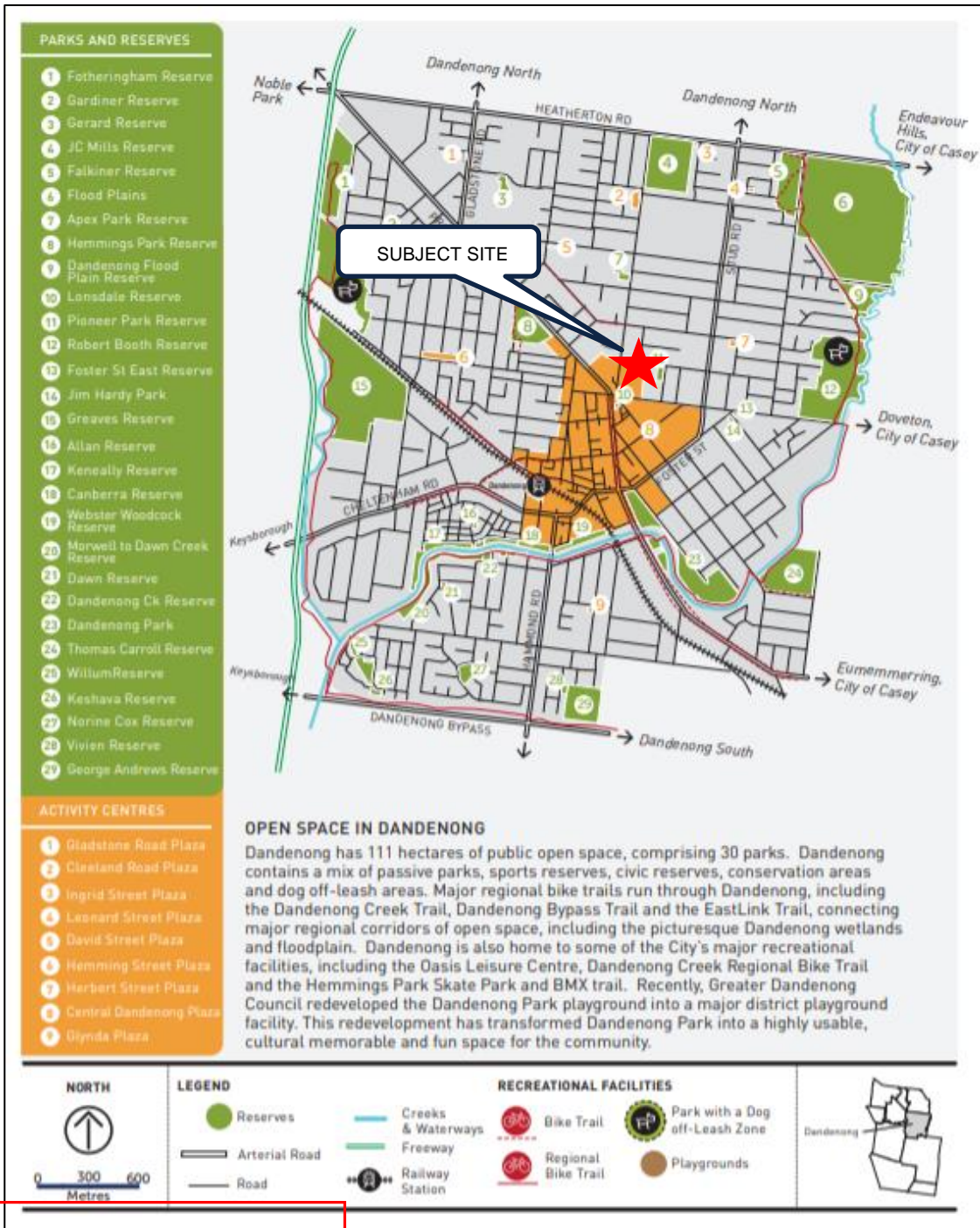
## 2.6 Bicycle Network

Surrounding bicycle path infrastructure includes:

- > Princess Freeway / Lonsdale Street – on-road separate bicycle lane along both sides of the road starting at the intersection of Clow Street extending out towards the City of Casey;
- > Dandenong Creek – off-road bicycle lane on either side of Dandenong Creek extending upwards of Dandenong North;

Dandenong City Council’s Bicycle Network Plan of existing routes for area vicinity of the subject site is presented in Figure 2-8.

Figure 2-8 Dandenong Bicycle Network Plan



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## 3 Proposed Development

### 3.1 General

The proposal is to develop the site for the purpose of a medium-density residential development comprised of 15 dwellings as set out in Table 3-1.

Table 3-1 Summary of Proposal

Level	Remarks	Number of Dwellings
Basement	16 car parking spaces (2-level car stacker system)	-
Level 0	2 x 1-bedroom & 3 x 2-bedrooms	5 dwellings
Level 1	4 x 2 bedrooms	4 dwellings
Level 2	3 x 1-bedroom & 1 x 2-bedrooms	4 dwellings
Level 3	1 x 1-bedroom & 1 x 2-bedrooms	2 dwellings
<b>Total</b>		<b>15 dwellings</b>

### 3.2 Car Parking and Access

Car parking is proposed within a single basement levels, utilising mechanical car parking (Klaus Multibase parking system – refer Appendix A for specifications). The basement parking provides for a total of 16 car parking spaces.

Vehicle access to the basement parking is proposed via a new crossover to King Street. The existing crossover will be reinstated and on-street car parking will be relocated and generally remain unchanged.

Bicycle parking is proposed within the basement car park adjacent to the stair core.

Waste collection is to be undertaken with collection vehicles stopping at the frontage of the site to King Street.

## 4 Design Considerations

### 4.1 Design Standard 1 – Accessways

Design Standard 1 of Clause 52.06-8 of the Greater Dandenong Planning Scheme lists a number of design requirements in relation to accessways for applications to construct more than one dwelling on a lot. These requirements are assessed against the proposed development in Table 4-1.

Table 4-1 Design Standard 1 - Accessways

Requirement	Comments
Be at least 3 metres wide	Satisfied – Accessway includes a 3.5 metres width for one way traffic movements
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Satisfied – Swept paths have been prepared demonstrating access to the end spaces.
Provide at least 2.1 metres headroom beneath overhead obstructions calculated for a vehicle with a wheel base of 2.8 metres	Satisfied – A minimum headroom of 2.1 metres is provided throughout the car park.
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	Satisfied.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Road Zone	N/A – accessway is less than 50 metres and does not connect to a road in a Road Zone. The one-way access ramp is expected to adequately cater for the expected level of traffic movements.
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height	A corner splay clear of visual obstructions is achieved extending approximately 2 metres along the frontage road and 2.5 metres along the exit lane (eastern side). The western side is partially restricted by the neighbouring fence line.
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway	Satisfied.
If entry to the car space is from a road, the width of the accessway may include the road	N/A

As demonstrated in Table 4-1, the accessway for the proposed development is considered to be compliant with the requirements of Design Standard 1 of Clause 52.06-8 of the Greater Dandenong Planning Scheme.

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## 4.2 Design Standard 2 – Car Parking Spaces

The design requirements for a development relating to the dimensions of car parking spaces are stipulated in Design Standard 2 of Clause 52.06-8 of the Banyule Planning Scheme. The subject developments provisions in terms of car parking spaces are assessed in Table 4-2 below.

Table 4-2 Design Standard 2 – Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Clause 52.06-8	Satisfied. The standard stacker parking spaces have a length of 5.2m and are accessed from an aisle width of at least 6.4m.
A wall, tree or tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 within Clause 52.06-8.	Satisfied.

As demonstrated in Table 4-2, the dimensions of the car parking spaces proposed for the development are considered to be compliant with the requirements of Design Standard 2 of Clause 52.06-8 of the Greater Dandenong Planning Scheme and expected to all provide parking for residents.

Further to the above, swept paths have been prepared demonstrating access to car stacker spaces attached within Appendix B.

## 4.3 Design Standard 3 – Gradients

The access to the site has a maximum grade of 1:10 within 5 metres of the frontage, in accordance with Clause 52.06-8.

The ramp from ground floor to the first basement level has a maximum grade of 1:4 and transitions in accordance with the Planning Scheme.

## 4.4 Design Standard 4 – Mechanical Parking

Mechanical parking is proposed to accommodate all car parking within the basement level car park in the form of four (4) double platform Klaus Multibase 2072i parking systems (or similar) providing 16 car parking spaces. The specification sheet is provided in Appendix A.

In accordance with Clause 52.06 at least 25% of the mechanical parking spaces accommodate a vehicle height of at least 1.8 metres.

## 5 Statutory Car Parking Requirements

Clause 52.06 of the Planning Scheme sets out the statutory requirements for car parking. The subject site falls within the PPTN and therefore the rate provided in “Column B” is used. The statutory car parking requirement for the proposed development is set out in Table 5-1.

Table 5-1 Statutory Car Parking Requirement

Use	Area / No.	Rate	Car Parking Measure	Requirement
Dwelling – 1 or 2 bedroom	15 dwellings	1	to each one or two bedroom dwelling	15 spaces
Dwelling - visitors	(15 dwellings)	0	to every 5 dwellings for developments of 5 or more dwellings	-
<b>Total</b>				<b>15 spaces</b>

The proposed development has a statutory requirement to provide 15 car spaces for residents only and no parking required for visitors. The proposed development is providing 16 car spaces, which satisfies the requirements as per the planning scheme.

## 6 Bicycle Facilities

Clause 52.34 of the Planning Scheme sets out the statutory requirements for bicycle facilities.

The bicycle parking rate for dwellings is set out below:

- > *Residents: In developments of four or more storeys, 1 bicycle space to each 5 dwellings*
- > *Visitors: In developments of four or more storeys, 1 bicycle space to each 10 dwellings*

The proposed dwellings are less than four storeys high and accordingly has no statutory requirement to provide bicycle parking.

Nevertheless, an area is proposed to be reserved for bicycle parking within the basement car park.

## 7 Traffic Considerations

The RTA Guide to Traffic Generating Developments (2002) sets out traffic generation rates for a range of land uses based on empirical studies undertaken by the NSW Road and Traffic Authority.

It is acknowledged in Part 12 of Austroads Guide to Traffic Management as the most comprehensive Australian reference on traffic generation.

The RTA Guide sets out the following traffic generation rates for medium density housing:

Smaller units and flats (up to two bedrooms):

- > *Daily vehicle trips = 4-5 trips per dwelling*
- > *Weekday peak hour vehicle trips = 0.4-0.5 trips per dwelling.*

By adopting the abovementioned rates, the proposal would be expected to generate in the order of 68 vehicle movements per day, inclusive of 7 vehicle movements during the road network peak hours.

Based on the calculated number of trips, the level of traffic generated by the proposed medium density residential development is low and can be comfortably accommodated on the surrounding road network.

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## 8 Conclusions

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Having undertaken a traffic engineering assessment of the proposed medium density residential development, we are of the opinion that:

- > The design of the car parking and access arrangements is appropriate and will function satisfactorily;
- > The proposed car parking provision is appropriate and satisfies the requirements as per the planning schemes;
- > There is no requirement to provide bicycle parking;
- > The proposal would be expected to generate in the order of 68 vehicle movements per day, inclusive of the 7 vehicle movements during the road network peak hours; and
- > The level of traffic generated by the proposed medium density residential development is low and can be comfortably accommodated within the surrounding road network.



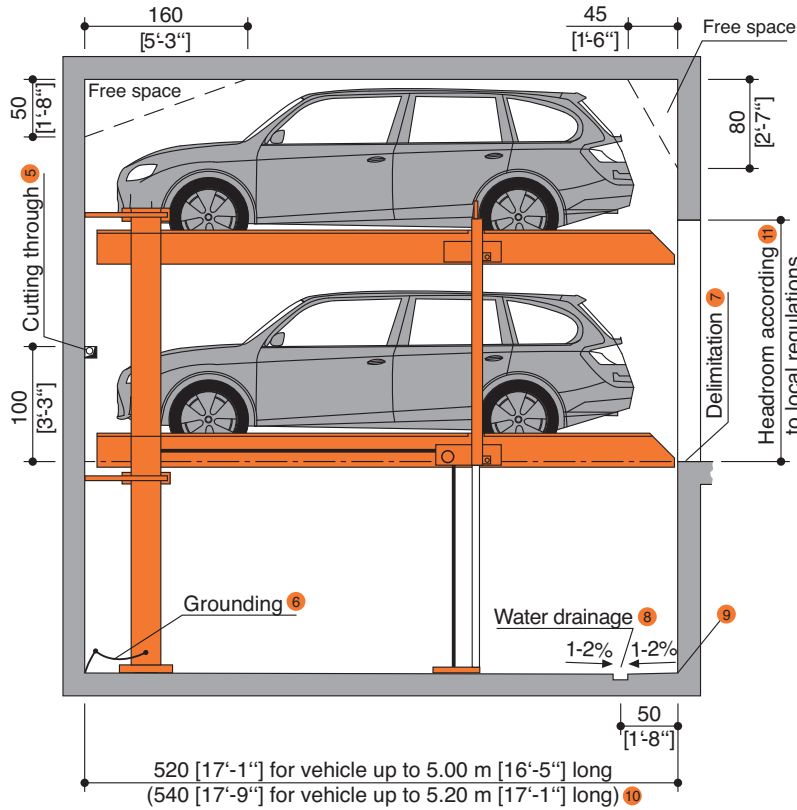
APPENDIX

A

CAR STACKER SPECIFICATIONS

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**Garage without door (basement garage)**



**Dimensions**

All space requirements are minimum finished dimensions.

Tolerances for space requirements  $+3 \begin{matrix} +1 \\ 0 \end{matrix}$  <sup>3</sup>

EB (single platform) = 2 vehicles  
 DB (double platform) = 4 vehicles

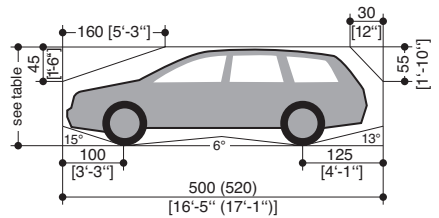
Dimensions: cm [ft] (1 cm = 0,393 in)  
 Weights: kg [lbs] (1 kg = 2.2 lbs)  
 Forces: kN [lbf] (1 kN = 224.8 lbf)  
 Temperature: °C [°F] (0° C = 32° F)

**Suitable for**

Standard passenger cars:  
 Limousine, Station Wagon, SUV, Van  
 according to clearance and maximum surface load.

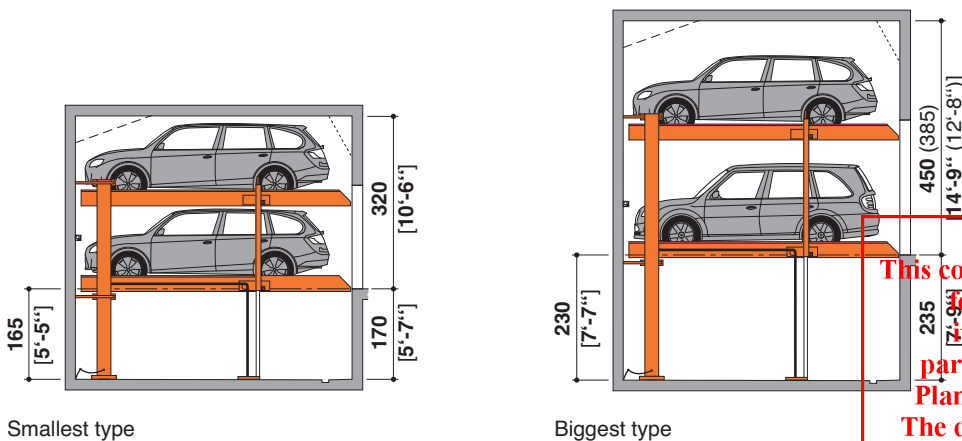
	Standard	Special <sup>2</sup>
Width	190 cm [6'-3"] <sup>4</sup>	190 cm [6'-3"] <sup>4</sup>
Weight	max. 2000 kg [max. 4400 lbs]	max. 2600 kg [max. 5730 lbs]
Wheel load	max. 500 kg [max. 1100 lbs]	max. 650 kg [max. 1430 lbs]

**Clearance profile**



**Height dimensions**

See page 2 for all pit and height dimensions.



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- <sup>1</sup> Standard type
- <sup>2</sup> Special system: maximum load for extra charge (maximum load for EB up to 3000 kg [6610 lbs] per place for extra charge).
- <sup>3</sup> To follow the minimum finished dimensions, make sure to consider the tolerances according to VOB, part C (DIN 18330 and 18331) and the DIN 18202.
- <sup>4</sup> Car width for platform width 230 cm [7'-7"]. If wider platforms are used it is also possible to park wider cars.
- <sup>5</sup> For dividing walls: cutting through 10 x 10 cm [4" x 4"].
- <sup>6</sup> Potential equalization from foundation grounding connection to system (provided by the customer).

- <sup>7</sup> In compliance with DIN EN 14010, 10 cm [4"] wide yellow-black markings compliant to ISO 3864 must be applied by the customer to the edge of the pit in the entry area to mark the danger zone (see „load plan“ page 7).
- <sup>8</sup> Slope with drainage channel and sump.
- <sup>9</sup> At the transition section between pit floor and walls no hollow mouldings/coves are possible. If hollow mouldings/coves are required, the systems must be designed smaller or the pits accordingly wider.
- <sup>10</sup> For convenient use of your parking space and due to the fact that the cars keep becoming longer we recommend a pit length of 540 cm [17'-9"].
- <sup>11</sup> Must be at least as high as the greatest car height + 5 cm [+ 2"].

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**Height dimensions for garage without door (basement garage)**

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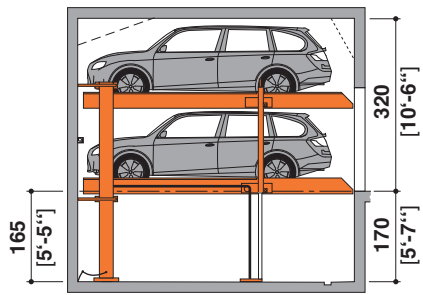
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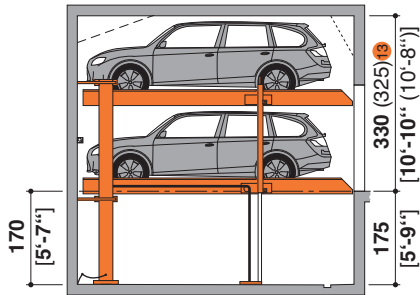
Page 12  
Description

**2072i-165 [5'-5"]**



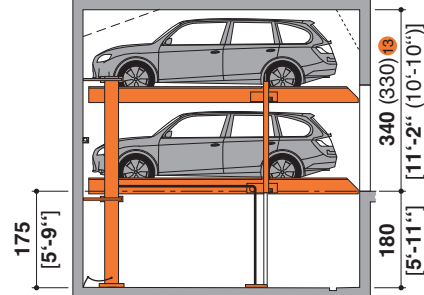
Height	Car height upper level	Car height lower level
320 [10'-6"]	150 [4'-11"]	150 [4'-11"]

**2072i-170 [5'-7"]**



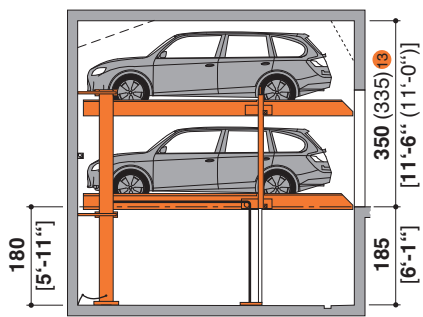
Height	Car height upper level	Car height lower level
330 [10'-10"] (325) [10'-8"]	155 [5'-1"] 150 [4'-11"]	155 [5'-1"] 155 [5'-1"]

**2072i-175 [5'-9"]**



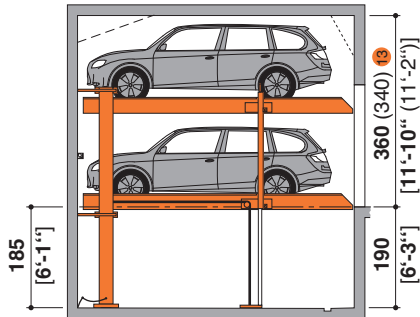
Height	Car height upper level	Car height lower level
340 [11'-2"] (330) [10'-10"]	160 [5'-3"] 150 [4'-11"]	160 [5'-3"] 160 [5'-3"]

**2072i-180 [5'-11"] 12**



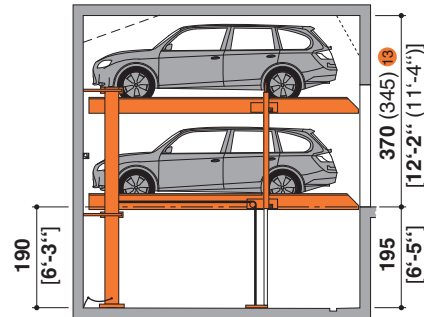
Height	Car height upper level	Car height lower level
350 [11'-6"] (335) [11'-0"]	165 [5'-5"] 150 [4'-11"]	165 [5'-5"] 165 [5'-5"]

**2072i-185 [6'-1"]**



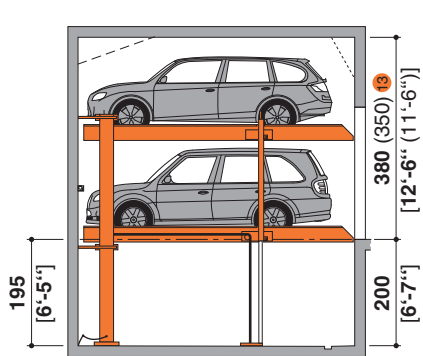
Height	Car height upper level	Car height lower level
360 [11'-10"] (340) [11'-2"]	170 [5'-7"] 150 [4'-11"]	170 [5'-7"] 170 [5'-7"]

**2072i-190 [6'-3"]**



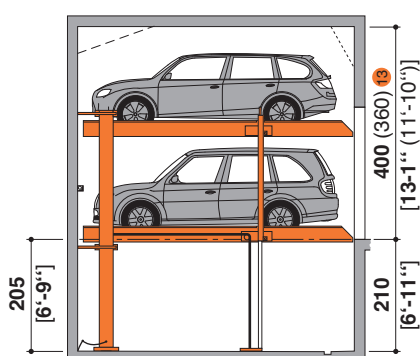
Height	Car height upper level	Car height lower level
370 [12'-2"] (345) [11'-4"]	175 [5'-9"] 150 [4'-11"]	175 [5'-9"] 175 [5'-9"]

**2072i-195 [6'-5"]**



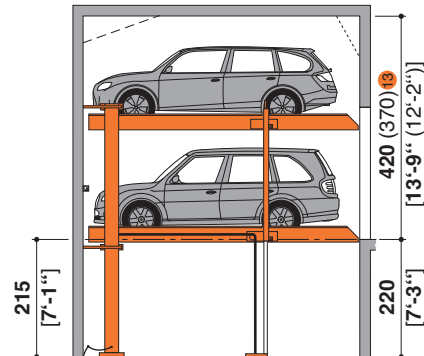
Height	Car height upper level	Car height lower level
380 [12'-6"] (350) [11'-6"]	180 [5'-11"] 150 [4'-11"]	180 [5'-11"] 180 [5'-11"]

**2072i-205 [6'-9"]**



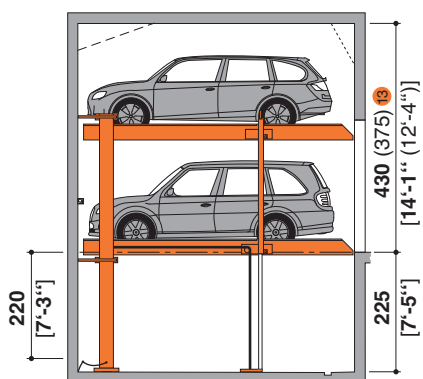
Height	Car height upper level	Car height lower level
400 [13'-1"] (360) [11'-10"]	190 [6'-3"] 150 [4'-11"]	190 [6'-3"] 190 [6'-3"]

**2072i-215 [7'-1"]**



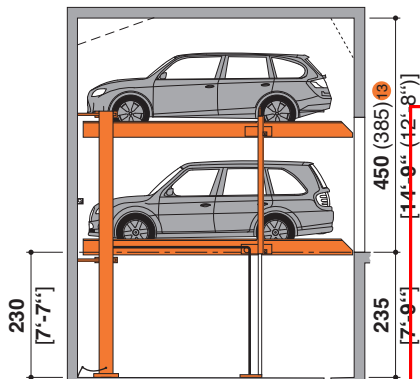
Height	Car height upper level	Car height lower level
420 [13'-9"] (370) [12'-2"]	200 [6'-7"] 150 [4'-11"]	200 [6'-7"] 200 [6'-7"]

**2072i-220 [7'-3"]**



Height	Car height upper level	Car height lower level
430 [14'-1"] (375) [12'-4"]	205 [6'-9"] 150 [4'-11"]	205 [6'-9"] 205 [6'-9"]

**2072i-230 [7'-7"]**



Height	Car height upper level	Car height lower level
450 [14'-9"] (385) [12'-8"]	215 [7'-1"] 150 [4'-11"]	215 [7'-1"] 215 [7'-1"]

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12 Standard type  
13 If a higher ceiling height is available higher cars can be parked.



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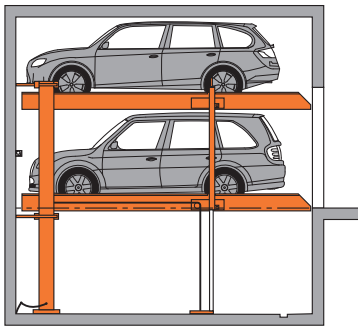
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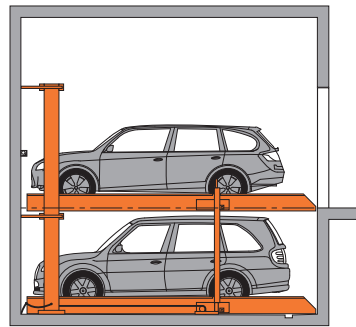
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## Function

### System lifted



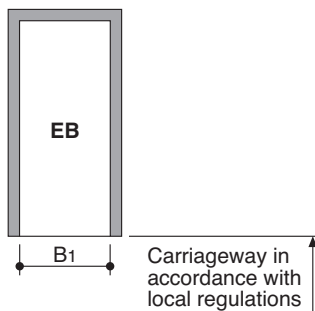
### System lowered



## Width dimensions for garage without door (basement garage)

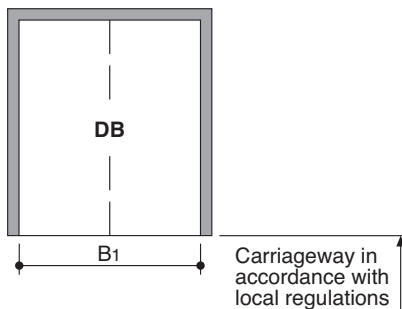
### Dividing walls

#### Single Platform (EB)



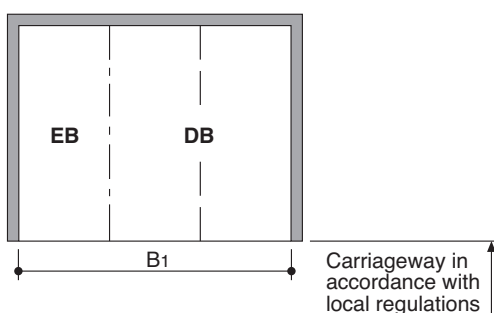
Usable platform width	B1
230 [7'-7"	260 [8'-6"
240 [7'-10"	270 [8'-10"
250 [8'-2"	280 [9'-2"
260 [8'-6"	290 [9'-6"
270 [8'-10"	300 [9'-10"

#### Double Platform (DB)



Usable platform width	B1
460 [15'-1"	490 [16'-1"
470 [15'-5"	500 [16'-5"
480 [15'-9"	510 [16'-9"
490 [16'-1"	520 [17'-1"
500 [16'-5"	530 [17'-5"
510 [16'-9"	540 [17'-9"
520 [17'-1"	550 [18'-1"
530 [17'-5"	560 [18'-4"
540 [17'-9"	570 [18'-8"

#### Single and Double Platform (EB + DB) – Example



Usable platform width	B1
230 + 460 [7'-7" + 15'-1"	750 [24'-7"
240 + 470 [7'-10" + 15'-5"	770 [25'-3"
250 + 480 [8'-2" + 15'-9"	790 [25'-11"
250 + 500 [8'-2" + 16'-5"	810 [26'-7"
270 + 500 [8'-10" + 16'-5"	830 [27'-3"
270 + 510 [8'-10" + 16'-9"	840 [27'-7"
270 + 520 [8'-10" + 17'-1"	850 [27'-11"
270 + 530 [8'-10" + 17'-5"	860 [28'-3"
270 + 540 [8'-10" + 17'-9"	870 [28'-7"

**!** For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm [8'-10"] for single platforms and 540 cm [17'-9"] for double platforms. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

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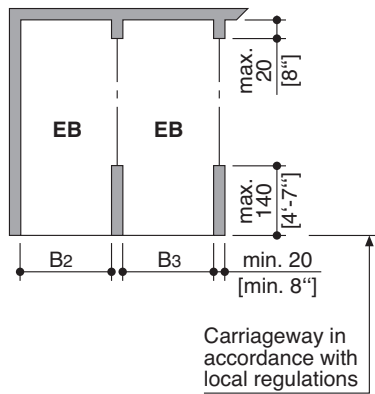
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## Width dimensions for garage without door (basement garage)

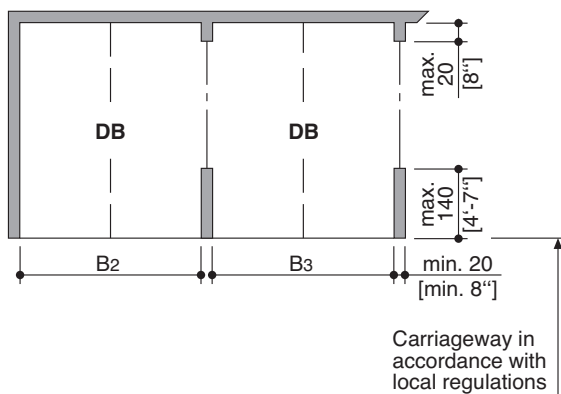
### Columns in pit

#### Single Platform (EB)



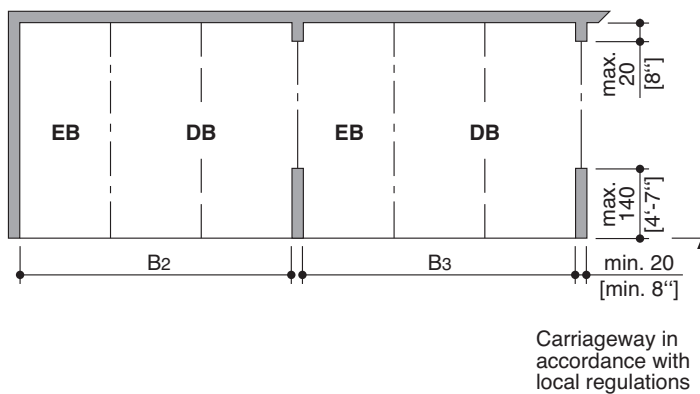
Usable platform width	B2	B3
230 [7'-7" ]	255 [8'-4" ]	245 [8'-0" ]
240 [7'-10" ]	265 [8'-8" ]	255 [8'-4" ]
250 [8'-2" ]	275 [9'-0" ]	265 [8'-8" ]
260 [8'-6" ]	285 [9'-4" ]	275 [9'-0" ]
270 [8'-10" ]	295 [9'-8" ]	285 [9'-4" ]

#### Double Platform (DB)



Usable platform width	B2	B3
460 [15'-1" ]	485 [15'-11" ]	475 [15'-7" ]
470 [15'-5" ]	495 [16'-3" ]	485 [15'-11" ]
480 [15'-9" ]	505 [16'-7" ]	495 [16'-3" ]
490 [16'-1" ]	515 [16'-11" ]	505 [16'-7" ]
500 [16'-5" ]	525 [17'-3" ]	515 [16'-11" ]
510 [16'-9" ]	535 [17'-7" ]	525 [17'-3" ]
520 [17'-1" ]	545 [17'-11" ]	535 [17'-7" ]
530 [17'-5" ]	555 [18'-3" ]	545 [17'-11" ]
540 [17'-9" ]	565 [18'-6" ]	555 [18'-3" ]

#### Single and Double Platform (EB + DB) – Example



Usable platform width	B2	B3
230 + 460 [7'-7" + 15'-1" ]	745 [24'-5" ]	735 [24'-1" ]
240 + 470 [7'-10" + 15'-5" ]	765 [25'-1" ]	755 [24'-9" ]
250 + 480 [8'-2" + 15'-9" ]	785 [25'-9" ]	775 [25'-5" ]
250 + 500 [8'-2" + 16'-5" ]	805 [26'-5" ]	795 [26'-1" ]
270 + 500 [8'-10" + 16'-5" ]	825 [27'-1" ]	815 [26'-9" ]
270 + 510 [8'-10" + 16'-9" ]	835 [27'-5" ]	825 [27'-1" ]
270 + 520 [8'-10" + 17'-1" ]	845 [27'-9" ]	835 [27'-5" ]
270 + 530 [8'-10" + 17'-5" ]	855 [28'-1" ]	845 [27'-9" ]
270 + 540 [8'-10" + 17'-9" ]	865 [28'-5" ]	855 [28'-1" ]



For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm [8'-10"] for single platforms and 540 cm [17'-9"] for double platforms. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

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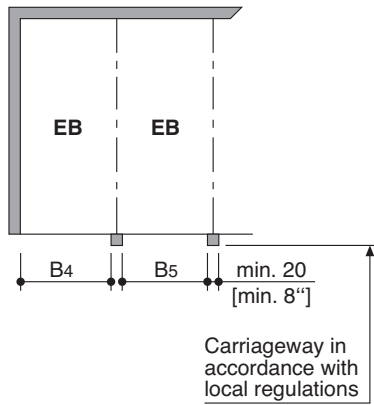
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## Width dimensions for garage without door (basement garage)

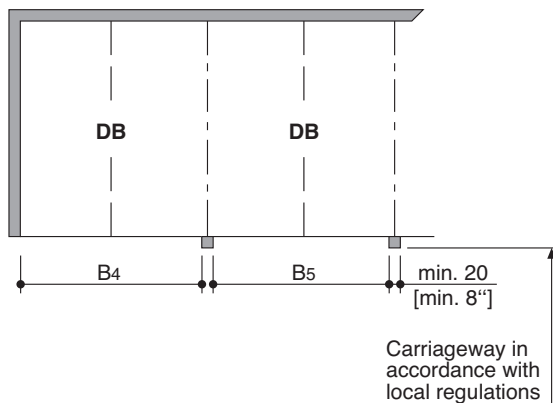
### Columns outside pit

#### Single Platform (EB)



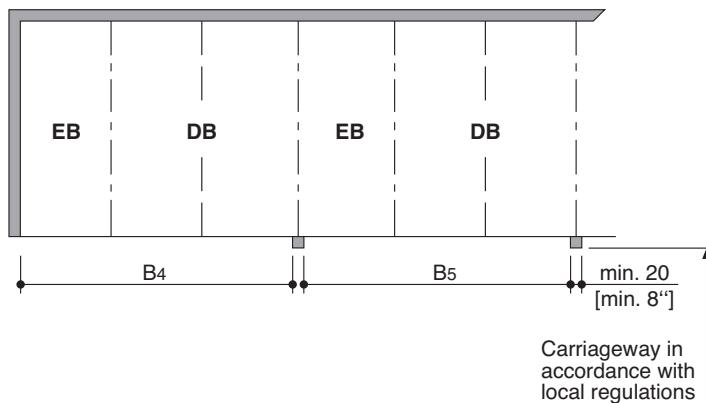
Usable platform width	B4	B5
230 [7'-7"]	250 [8'-2"]	240 [7'-10"]
240 [7'-10"]	260 [8'-6"]	250 [8'-2"]
<b>250 [8'-2"]</b>	<b>270 [8'-10"]</b>	<b>260 [8'-6"]</b>
260 [8'-6"]	280 [9'-2"]	270 [8'-10"]
270 [8'-10"]	290 [9'-6"]	280 [9'-2"]

#### Double Platform (DB)



Usable platform width	B4	B5
460 [15'-1"]	480 [15'-9"]	470 [15'-5"]
470 [15'-5"]	490 [16'-1"]	480 [15'-9"]
480 [15'-9"]	500 [16'-5"]	490 [16'-1"]
490 [16'-1"]	510 [16'-9"]	500 [16'-5"]
500 [16'-5"]	520 [17'-1"]	510 [16'-9"]
510 [16'-9"]	530 [17'-5"]	520 [17'-1"]
520 [17'-1"]	540 [17'-9"]	530 [17'-5"]
530 [17'-5"]	550 [18'-1"]	540 [17'-9"]
540 [17'-9"]	560 [18'-4"]	550 [18'-1"]

#### Single and Double Platform (EB + DB) – Example



Usable platform width	B4	B5
230 + 460 [7'-7" + 15'-1"]	740 [24'-3"]	730 [23'-11"]
240 + 470 [7'-10" + 15'-5"]	760 [24'-11"]	750 [24'-7"]
250 + 480 [8'-2" + 15'-9"]	780 [25'-7"]	770 [25'-3"]
250 + 500 [8'-2" + 16'-5"]	800 [26'-3"]	790 [25'-11"]
270 + 500 [8'-10" + 16'-5"]	820 [26'-11"]	810 [26'-7"]
270 + 510 [8'-10" + 16'-9"]	830 [27'-2"]	820 [26'-11"]
270 + 520 [8'-10" + 17'-1"]	840 [27'-7"]	830 [27'-3"]
270 + 530 [8'-10" + 17'-5"]	850 [27'-11"]	840 [27'-7"]
270 + 540 [8'-10" + 17'-9"]	860 [28'-2"]	850 [27'-11"]



For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm [8'-10"] for single platforms and 540 cm [17'-9"] for double platforms. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

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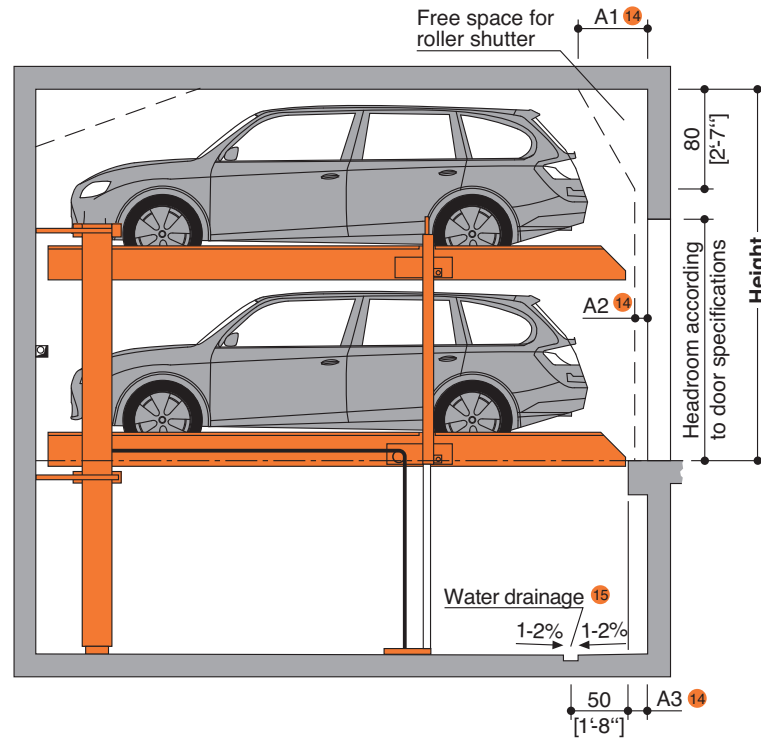
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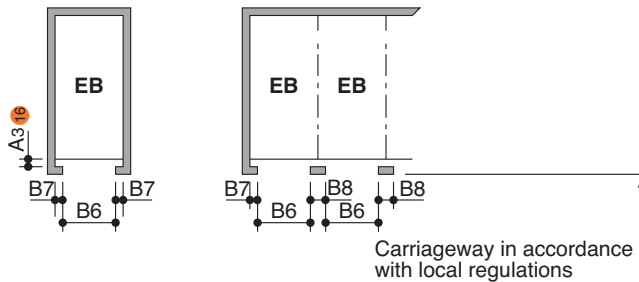
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## Garage with door



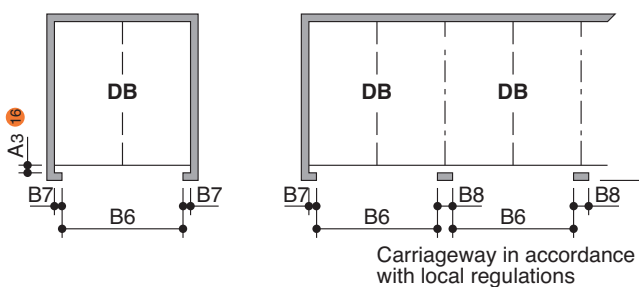
## Width dimensions for garage with door

### Single platform (EB)



Usable platform width	Door entrance width B6	B7	B8
230 [7'-7"]	230 [7'-10"]	15 [6"]	30 [12"]
240 [7'-10"]	240 [7'-10"]	15 [6"]	30 [12"]
250 [8'-2"]	250 [8'-2"]	15 [6"]	30 [12"]
260 [8'-6"]	260 [8'-6"]	15 [6"]	30 [12"]
270 [8'-10"]	270 [8'-10"]	15 [6"]	30 [12"]

### Double platform (DB)



Usable platform width	Door entrance width B6	B7	B8
460 [15'-1"]	460 [15'-1"]	15 [6"]	30 [12"]
470 [15'-5"]	470 [15'-5"]	15 [6"]	30 [12"]
480 [15'-9"]	480 [15'-9"]	15 [6"]	30 [12"]
490 [16'-1"]	490 [16'-1"]	15 [6"]	30 [12"]
500 [16'-5"]	500 [16'-5"]	15 [6"]	30 [12"]
510 [16'-9"]	510 [16'-9"]	15 [6"]	30 [12"]
520 [17'-1"]	520 [17'-1"]	15 [6"]	30 [12"]
530 [17'-5"]	530 [17'-5"]	15 [6"]	30 [12"]
540 [17'-9"]	540 [17'-9"]	15 [6"]	30 [12"]

**!** For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm [8'-10"] for single platforms and 540 cm [17'-9"] for double platforms. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

**14** Dimensions A1, A2 and A3 must be coordinated with the door supplier (provided by the customer).

**15** Slope with drainage channel and sump.

**16** Seat-engaging surface (dimensions require coordination with door supplier.) Allround door dimensions require coordination between door supplier and local agency of KLAUS Multiparking.

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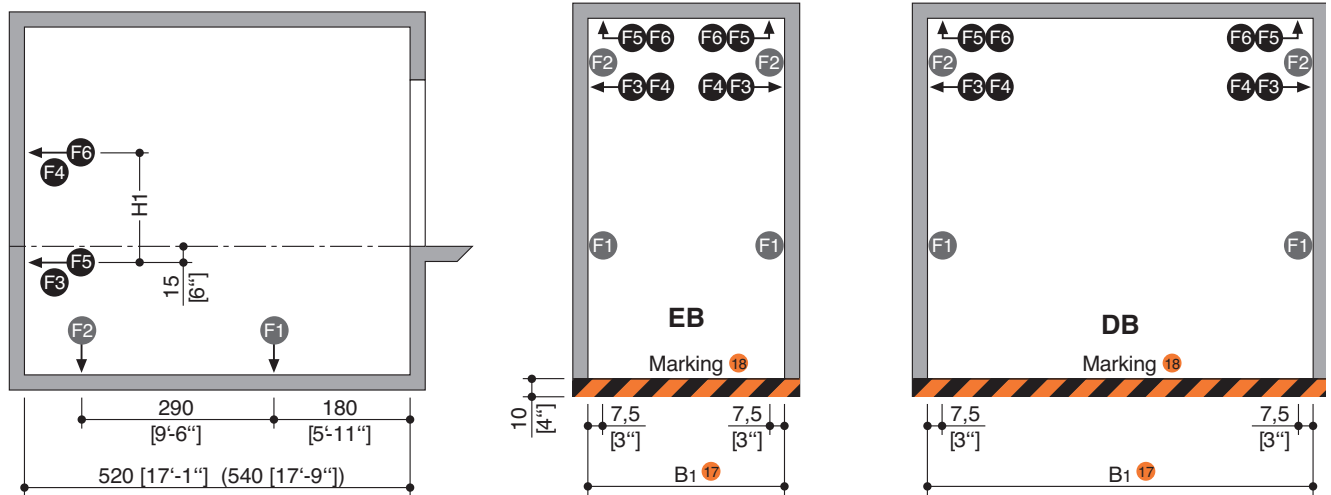
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## Load plan



### Platform load in kg

Platform load	F1	F2	F3	F4	F5	F6
EB 2000 kg	+28 -1,7	+12	±1	±0,8	±1,1	±1,1
EB 2600 kg	+36 -2,2	+15	±1,3	±1	±1,4	±1,4
EB 3000 kg	+42 -2,4	+17	±1,5	±1,2	±1,6	±1,6
DB 2000 kg	+51 -6,7	+20	±1,6	±2,6	±2	±2
DB 2600 kg	+67 -8,6	+26	±2,1	±3,4	±2,6	±2,6

### Platform load in lbs

Platform load	F1	F2	F3	F4	F5	F6
EB 4400 lbs	+6,295 -382	+2,698	±225	±180	±247	±247
EB 5730 lbs	+8,093 -495	+3,372	±292	±225	±315	±315
EB 6610 lbs	+9,442 -540	+3,822	±337	±270	±360	±360
DB 4400 lbs	+11,465 -1,506	+4,496	±360	±585	±450	±450
DB 5730 lbs	+15,062 -1,933	+5,845	±472	±764	±585	±585

Type	H1
2072i-165 [5'-5" ]	210 [6'-11" ]
2072i-170 [5'-7" ]	215 [7'-1" ]
2072i-175 [5'-9" ]	220 [7'-3" ]
2072i-180 [5'-11" ]	225 [7'-5" ]
2072i-185 [6'-1" ]	230 [7'-7" ]
2072i-190 [6'-3" ]	235 [7'-9" ]
2072i-195 [6'-5" ]	240 [7'-10" ]
2072i-205 [6'-9" ]	250 [8'-2" ]
2072i-215 [7'-1" ]	260 [8'-6" ]
2072i-220 [7'-3" ]	265 [8'-8" ]
2072i-230 [7'-7" ]	275 [9'-0" ]

! Units are dowelled to the floor. Drilling depth: approx. 15 cm [6"].

Floor and walls below the drive-in level are to be made of concrete (quality minimum C20/25)!

The dimensions for the points of support are rounded values. If the exact position is required, please contact KLAUS Multiparking.

<sup>17</sup> Dimension B1 see page 3

<sup>18</sup> Marking compliant to ISO 3864 (colors used in this illustration are not ISO 3864 compliant)

<sup>19</sup> All forces in kN

<sup>20</sup> All forces in lbf

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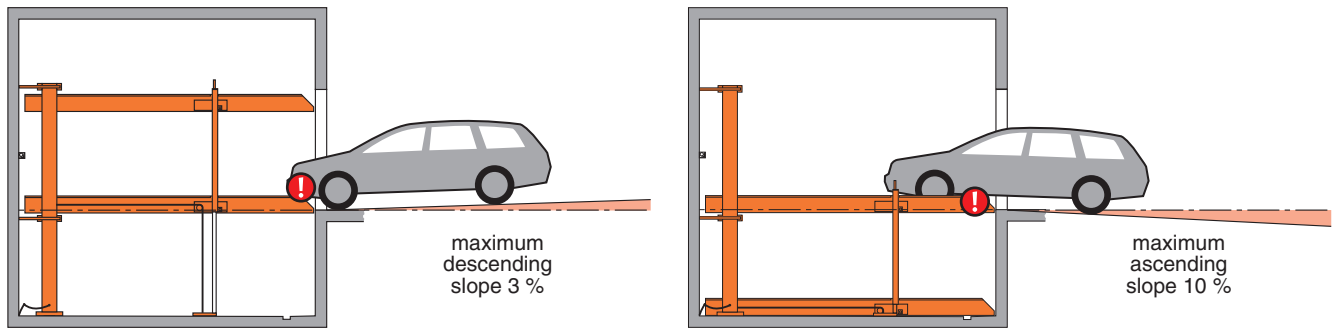
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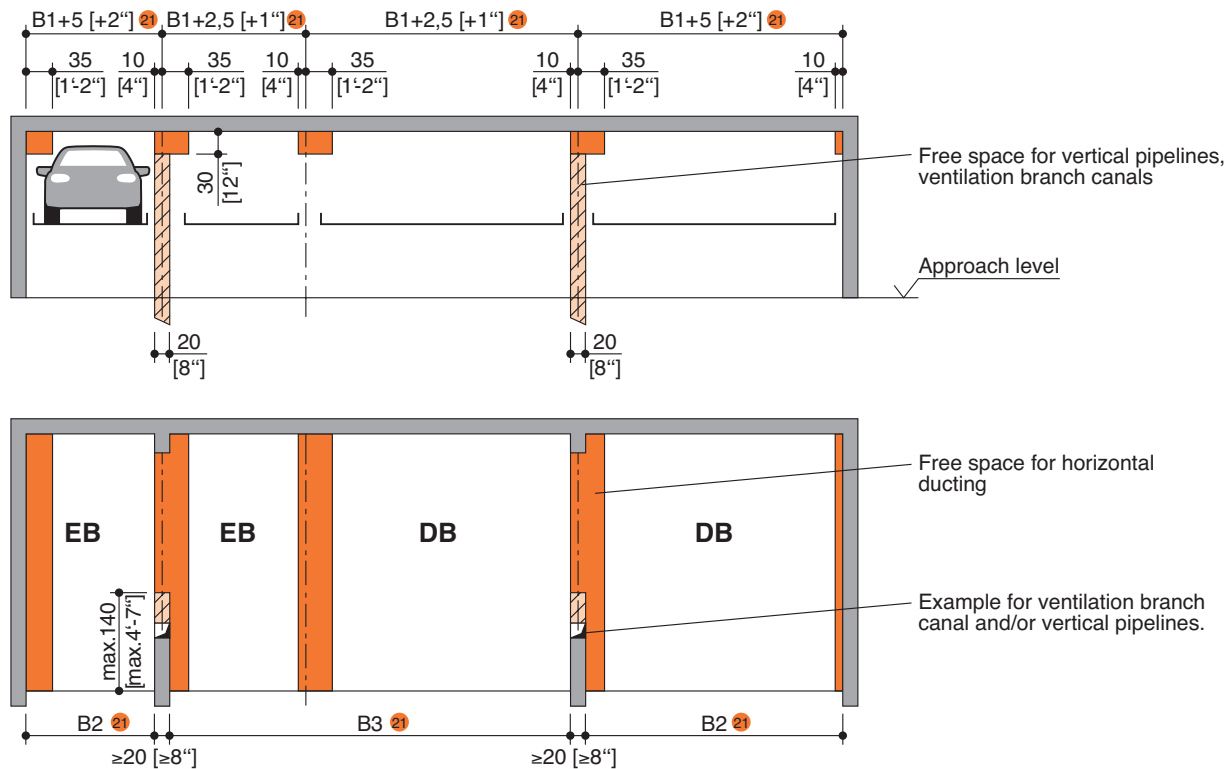
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## Approach



! The illustrated maximum approach angles must not be exceeded. Incorrect approach angles will cause serious manoeuvring & positioning problems on the parking system for which the local agency of KLAUS Multiparking accepts no responsibility.

## Installation data – Free space for longitudinal and vertical ducts (e.g. ventilation)



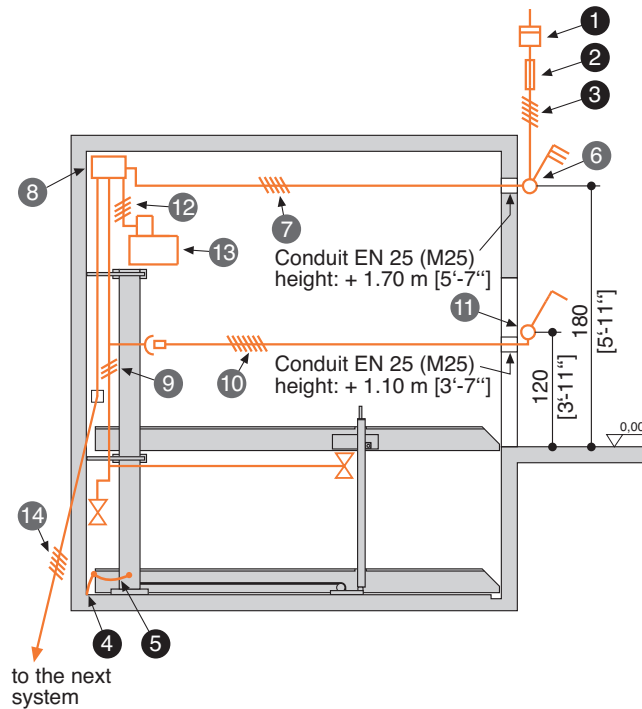
! Free space only applicable if vehicle is parked forwards = FRONT FIRST and driver's door on the left side.

<sup>2)</sup> Dimensions B1, B2 and B3 see page 3 to 4

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## Electrical installation

### Installation diagram



### Electrical data (to be performed by the customer)

No.	Quantity	Description	Position	Frequency
1	1	Electricity meter	in the supply line	
2	1	Main fuse: 3 x fuse 16 A (slow) or circuit breaker 3 x 16 A (trigger characteristic K or C) 3 x fuse 20 A (slow) or circuit breaker 3 x 20 A (trigger characteristic K or C) 2 x fuse 32 A (slow) or circuit breaker 2 x 32 A (trigger characteristic K or C) 3 x fuse 25 A (slow) or circuit breaker 3 x 25 A (trigger characteristic K or C)	in the supply line	1 per 3,0 kW unit 1 per 5,2 kW unit 1 per 3,7 kW unit 1 per 4,0 kW unit
3	1	Supply line 5 x 2,5 mm <sup>2</sup> (3 PH + N + PE) with marked wire and protective conductor  Supply line 5 x AWG 10 (2 PH + PE) with marked wire and protective conductor  Supply line 5 x AWG 12 (3 PH + PE) with marked wire and protective conductor	to main switch	1 per 3,0 kW or 5,2 kW unit 1 per 3,7 kW unit 1 per 4,0 kW unit
4	every 10 m	Foundation earth connector	corner pit floor	
5	1	Equipotential bonding in accordance with DIN EN 60204 from foundation earth connector to the system		1 per system

### Electrical data (included in delivery of KLAUS Multiparking)

No.	Description
6	Lockable main switch
7	Supply line 5 x 2,5 mm <sup>2</sup> (3 PH + N + PE) with marked wire and protective conductor (for 3,0 kW and 5,2 kW unit) Supply line 5 x AWG 10 (2 PH + PE) with marked wire and protective conductor (for 3,7 kW unit) Supply line 5 x AWG 12 (3 PH + PE) with marked wire and protective conductor (for 4,0 kW unit)
8	Junction box unit
9	Wiring harness multiparking system
10	Connection cable (operating device)
11	Operating device
12	Control line 4 x 2,5 mm <sup>2</sup> [4 x AWG 14] with marked wire and protective conductor
13	Hydraulic unit 3,0 kW/5,2 kW, three-phase current, 230/400 V / 50 Hz <sup>22</sup> Hydraulic unit 3,7 kW, two-phase current, 240 V / 60 Hz Hydraulic unit 4,0 kW, three-phase current, 120/208 V / 60 Hz
14	Connection cable to the next system

<sup>22</sup> Unit with 5,2 kW only for 2072i DB 2600 kg [5730 lbs]

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## Technical data

### Field of application

By default, the system can only be used for a fixed number of users.

If different users use the system – only on the upper parking spaces – (e.g. short-time parkers in office buildings or hotels) the Multiparking system needs to be adjusted. If required, would you please contact us.

### Units

Low-noise power units mounted to rubber-bonded-to metal mountings are installed. Nevertheless we recommend that parking system's garage be built separately from the dwelling.

### Available documents

- wall recess plans
- maintenance offer/contract
- declaration of conformity
- test sheet on airborne and slid-borne sound

### Environmental conditions

Environmental conditions for the area of multiparking systems: Temperature range  $-10$  to  $+40^{\circ}\text{C}$  [ $+14$  to  $+104^{\circ}\text{F}$ ].

Relative humidity 50% at a maximum outside temperature of  $+40^{\circ}\text{C}$  [ $+104^{\circ}\text{F}$ ].

If lifting or lowering times are specified, they refer to an environmental temperature of  $+10^{\circ}\text{C}$  [ $+50^{\circ}\text{F}$ ] and with the system set up directly next to the hydraulic unit. At lower temperatures or with longer hydraulic lines, these times increase.

### Sound insulation

As per DIN 4109-1 (sound insulation in building construction), Section 9, KLAUS Multiparker are in the range of technical domestic installations (garage systems).

#### Normal sound insulation:

DIN 4109-1, Section 9, maximum permissible A-rated sound levels in rooms requiring external protection, generated by technical domestic installations and commercial businesses affiliated with the building.

Table 9 shows the values for the maximum permissible A-rated sound levels in rooms requiring external protection, generated by technical domestic installations and businesses affiliated with the building. As per line 2, the maximum sound level in living rooms and bedrooms must not exceed 30 dB (A). *User noises are not subject to the requirements (DIN 4109-1, Section 9).*

The following measures are required to comply with this value:

- Sound protection package according to offer/order (KLAUS Multiparking GmbH)
- Minimum sound insulation of the building of min.  $R'_{w} = 57$  dB (service/item to be provided by the customer)

#### Increased sound insulation (special agreement):

VDI 4100 (sound insulation in building construction) Assessment and proposals for enhanced sound insulation.

Agreement: Maximum sound level in living rooms and bedrooms 25 dB (A). *User noises are not subject to the requirements (see VDI 4100, Paragraph 1, Scope of application – Notes).*

The following measures are required to comply with this value:

- Sound protection package according to offer/order (KLAUS Multiparking GmbH)
- Minimum sound insulation of the building of min.  $R'_{w} = 62$  dB (service/item to be provided by the customer)

Note: User noises are basically noises that can be individually influenced by the user of our Multiparking systems. These include, for example, driving on the platform, slamming vehicle doors, engine and brake noises.

### Building application documents

According to LBO and GaVo (garage regulations) the Multiparking systems are subject to approval. We will provide the required building application documents.

### Care

To avoid damages resulting from corrosion, make sure to follow our cleaning and care instructions and to provide good ventilation of your garage.

### Corrosion protection

See separate sheet regarding corrosion protection.

### Railings

If the permissible drop opening is exceeded, railings are to be mounted on the systems. If there are traffic routes next to or behind the installations, railings compliant to DIN EN ISO 13857 must be installed by the customer. Railings must also be in place during construction.

### CE Certification

The systems on offer comply with DIN EN 14010 and EC Machine Directive 2006/42/EC. Furthermore, this system underwent voluntary conformity testing by TÜV SÜD.



### Certificate concerning the examination of conformity

<b>Certificate no:</b>	KP 454
<b>Certification body:</b>	TÜV SÜD Industrie Service GmbH Zertifizierungsstelle für Produkte der Fördertechnik Gottlieb-Daimler-Str. 7 70794 Filderstadt - Germany
<b>Applicant / Certification holder:</b>	KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Altrach - Germany
<b>Date of application:</b>	2015-08-12
<b>Manufacturer:</b>	KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Altrach - Germany
<b>Product:</b>	Equipment for power driven parking of motor vehicles
<b>Type:</b>	MultiBase 2072i / 2078i EB 2.000 kg, 2.600 kg, 3.000 kg MultiBase 2072i / 2078i DB 2.000 kg, 2.600 kg
<b>Test laboratory:</b>	TÜV SÜD Industrie Service GmbH Prüflaboratorium für Produkte der Fördertechnik Prüfbereich Maschinen der Fördertechnik Gottlieb-Daimler-Str. 7 70794 Filderstadt – Germany
<b>Date and number of the test report</b>	2016-08-09 KP 454
<b>mark of conformity:</b>	KP 454
<b>Test specifications:</b>	- 2006 / 42 / EC, Annex I - DIN EN 14010
<b>Validity:</b>	This Certificate is valid until 2021-08-08
<b>Result:</b>	The equipment fulfills the requirements of the test specifications for the respective scope of application stated in the annex (page 1) of this certificate, keeping the mentioned conditions.
<b>Date of issue:</b>	2016-08-09

Certification body "lifts and cranes"

Achim Janocha



TÜV®

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## To be performed by the customer

### Safety fences

Any constraints that may be necessary according to DIN EN ISO 13857 in order to provide protection for the park pits for pathways directly in front, next to or behind the unit. This is also valid during construction. Railings for the system are included in the series delivery when necessary.

### Numbering of parking spaces

Consecutive numbering of parking spaces.

### Building services

Any required lighting, ventilation, fire extinguishing and fire alarm systems as well as clarification and compliance with the relevant regulatory requirements.

### Drainage

For the front area of the pit we recommend a drainage channel, which you connect to a floor drain system or sump (50 x 50 x 20 cm) [1'-8" x 1'-8" x 8"]. The drainage channel may be inclined to the side, however not the pit floor itself (longitudinal incline is available). For reasons of environmental protection we recommend to paint the pit floor, and to provide oil and petrol separators in the connections to the public sewage network.

### Strip footings

If due to structural conditions strip footings must be effected, the customer shall provide an accessible platform reaching to the top of the said strip footings to enable and facilitate themounting work.

### Marking

In compliance with DIN EN 14010, 10 cm [4"] wide yellow-black markings compliant to ISO 3864 must be applied by the customer to the edge of the pit in the entry area to mark the danger zone.

### Wall cuttings

Any necessary wall cuttings according to page 1.

### Electrical supply to the main switch / Foundation earth connector

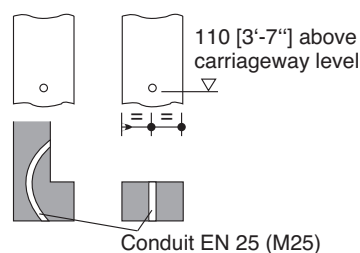
Suitable electrical supply to the main switch must be provided by the customer during installation. The functionality can be monitored on site by our fitters together with the electrician. If this cannot be done during installation for some reason for which the customer is responsible, the customer must commission an electrician at their own expense and risk.

In accordance with DIN EN 60204 (Safety of Machinery. Electrical Equipment), grounding of the steel structure is necessary, provided by the customer (distance between grounding max. 10 m [32'-10"]).

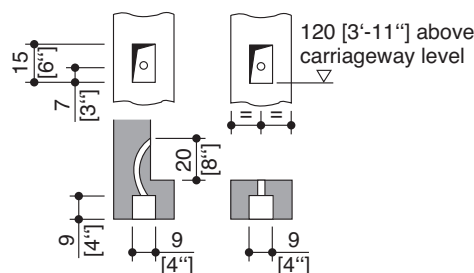
### Operating device

Cable conduits and recesses for operating device (for double wing doors: please contact the local agency of KLAUS Multiparking).

#### Operating device exposed



#### Operating device concealed / Not available for UL operating device



If the following are not included in the quotation, they will also have to be provided / paid for by the customer:

- Mounting of contactor and terminal box to the wall valve, complete wiring of all elements in accordance with the circuit diagram
- Costs for final technical approval by an authorized body
- Main switch
- Control line from main switch to hydraulic unit

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## Description Single platform (EB) and Double platform (DB)

### General description

Multiparking system providing independent parking spaces for 2 cars (EB), 2 x 2 cars (DB), one on top of the other each.

Dimensions are in accordance with the underlying dimensions of parking pit, height and width.

The parking bays are accessed horizontally (installation deviation  $\pm 1\%$  for correct drainage of platforms).

Due to the special lifting and bearing construction lifting of the doors is not restricted.

Vehicles are positioned on each parking space using wheel stops on the right side (adjust according to operating instructions).

Operation via operating device with hold-to-run-device using master keys.

The operating elements are usually mounted either in front of the column or on the outside of the door frame.

Operating instructions are attached to each operator's stand.

For garages with doors at the front of the parking system the special dimensional requirements have to be taken into account.

### Multiparking system consisting of:

- 2 steel pillars (mounted on the floor)
- 2 sliding platforms (mounted to the steel pillars with sliding bearings)
- 2 platforms
- 1 electro-hydraulic synchronization control system (to ensure synchronous operation of the hydraulic cylinders while lowering and lifting the platform)
- 2 hydraulic cylinders
- 2 rigid supports (connect the platforms)
- 2 chains and pocket wheels
- 2 automatic hydraulic safety valves (prevents accidental lowering of the platform while accessing the platform)
- Dowels, screws, connecting elements, bolts, etc.
- The platforms and parking spaces are end-to-end accessible for parking!

### Platforms consisting of:

- Platform base sections
- Adjustable wheel stops
- Canted access plates
- Side members
- Central side member [only DB]
- Cross members [DB long and short cross members]
- Safety railings – along the upper and lower platform (if required)
- Screws, nuts, washers, distance tubes, etc.

### Hydraulic system consisting of:

- Hydraulic cylinder
- Solenoid valves
- Safety valves
- Hydraulic conduits
- Screwed joints
- High-pressure hoses
- Installation material

### Electric system consisting of:

- Operating device (Emergency Stop, lock, 1 master key per parking space)
- Control unit with wiring harness and sensors

### Hydraulic unit consisting of:

- Hydraulic power unit (low-noise, installed onto a console with a rubber-bonded-to-metal mounting)
- Hydraulic oil reservoir
- Oil filling
- Internal geared wheel pump
- Pump holder
- Clutch
- AC-motor
- Junction box unit with contactor, motor protection switch and control fuse
- Test manometer
- Pressure relief valve
- Hydraulic hoses (which reduce noise transmission onto the hydraulic pipe)

## We reserve the right to change this specification without further notice

KLAUS Multiparking reserves the right in the course of technical progress to use newer or other technologies, systems, processes, procedures or standards in the fulfillment of their obligations other than those originally offered provided the customer derives no disadvantage from their so doing.

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APPENDIX

# B

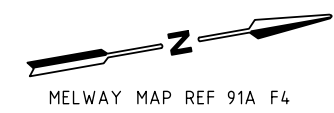
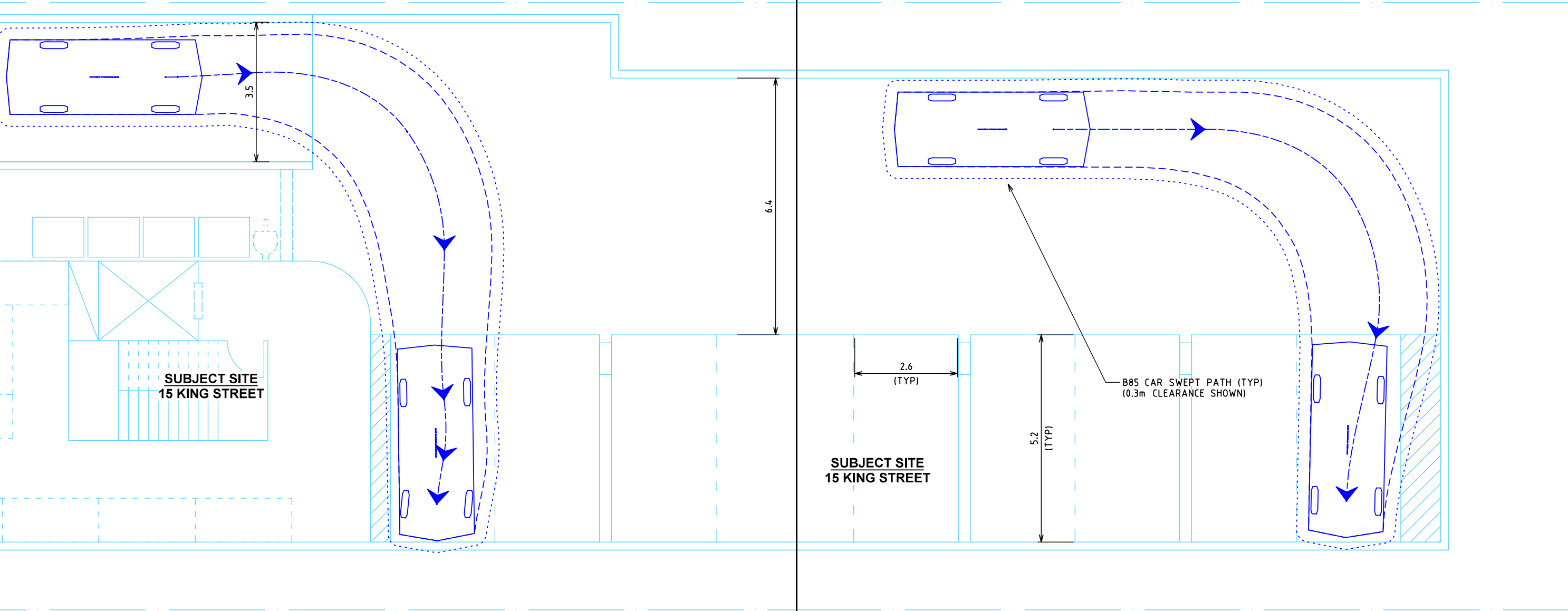
SWEPT PATH DIAGRAMS

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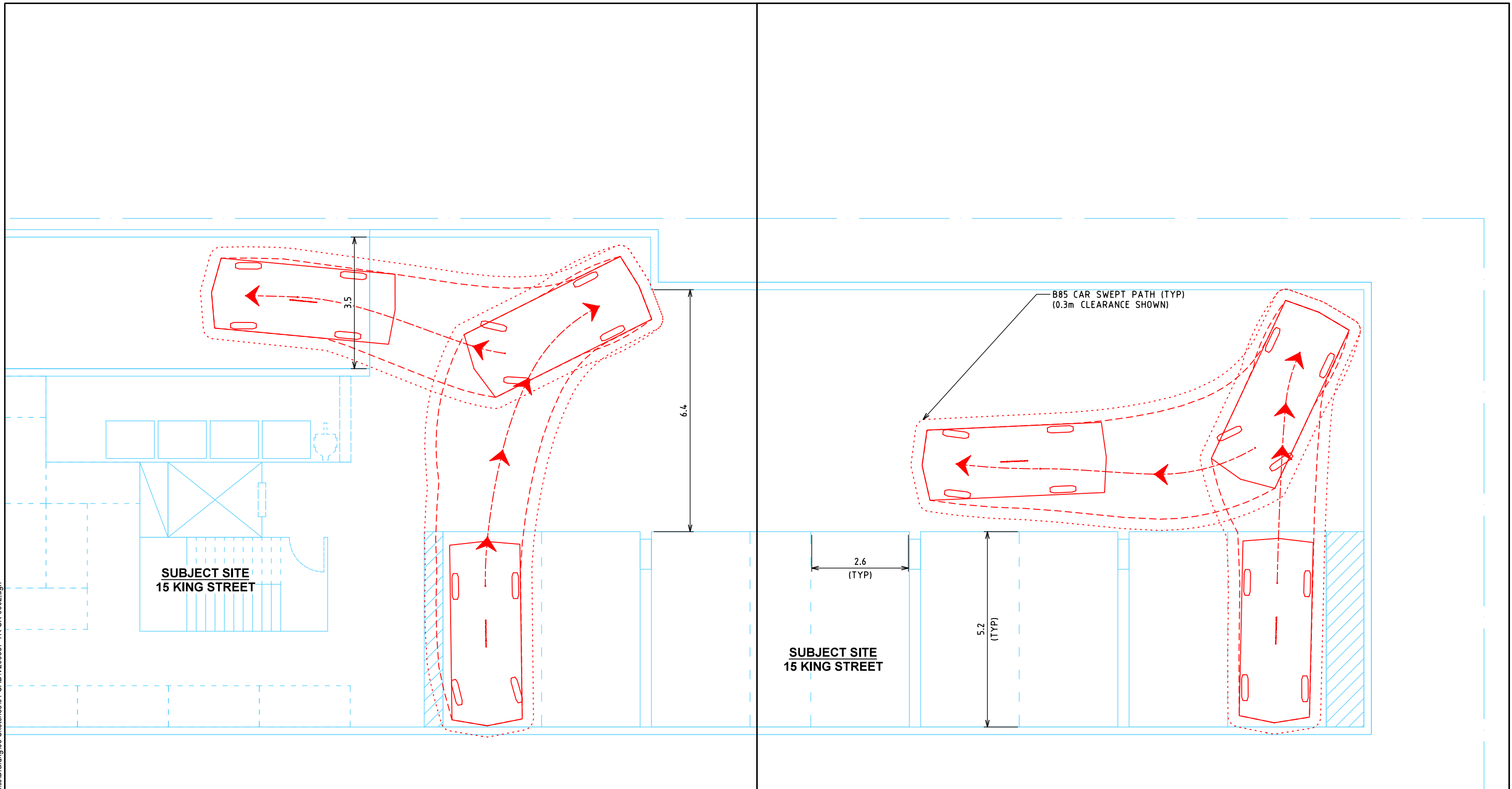


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		Drawn/Check/Date AB / VO 03.12.2020	Scale 1:100	Size A3
<p>ABN: 47 106 610 913 501 Swanston Street, Melbourne, VIC Australia 3000 Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788 Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria</p>		Revision 2		



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B85 CAR SWEPT PATH			
Drawn/Check	Date	Scale	Size
AB / VO	03.12.2020	1:100	A3
Drawing Number			Revision
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