

# Traffix Group

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## Traffic Engineering Assessment

Proposed Student Accommodation  
1494-1496 North Road, Clayton

Prepared for  
Alta Architecture

July, 2020

G27799R-01C

## Document Control

**Our Reference: G27799R-01C**

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## **1. Introduction**

Traffic Group has been engaged by Alta Architecture to prepare a traffic engineering report for a proposed student accommodation at 1494-1496 North Road, Clayton.

This report provides a detailed traffic engineering assessment of the parking and traffic issues associated with the proposed development.

## **2. Proposal**

The proposal is for a student accommodation facility on-site. A total of 106 beds are proposed, each within individual units. A total of 31 car spaces are located within a basement level carpark, resulting in a car parking rate of 0.3 car spaces per bed.

The 31 car spaces will be a combination of 13 standard car spaces and 18 car spaces provided via car stacker systems.

Vehicle access to the basement carpark is via a 6.5m wide accessway to North Road at the site's north-west corner. There will be no change to the supply of on-street car parking along the site's frontage (three spaces will remain).

A total of 57 bicycle spaces are provided across the development including 4 open spaces at ground level and 53 secure bicycles spaces within the basement carpark.

A copy of the development plans prepared by Alta Architecture (dated July, 2020), which form the basis of our assessment, are attached at Appendix A to this report.

## **3. Existing Conditions**

### **3.1. Subject Site**

The subject site is located on the south side of North Road, approximately 100m east of Princes Highway, in Clayton. A locality plan and aerial photograph are presented in Figure 1 and Figure 2, respectively.

The subject site is rectangular in shape and has a total site area of approximately 1,576m<sup>2</sup> and a frontage to North Road of approximately 32m.

The site is currently occupied by a church, 'Christian Science'. Informal car parking is possible at the rear of the site (grassed area only). A single-lane driveway provides vehicle access to the rear, extending along the western boundary of the property. The subject site shares a double width crossover with No. 1492 to the west.

There are 3 unrestricted on-street car spaces along the site's frontage to North Road.

The site is located within a Residential Growth Zone – Schedule 3 (RGZ3) under the Monash Planning Scheme as presented at Figure 3. The site is also located within the Principal Public Transport Network Area (PPTN). Existing land uses surrounding the subject site comprise a mixture of commercial and residential uses.

Significant nearby land uses are detailed below:

- **John Monash Science School**, located 250m east of the site,
- **Monash University**, beginning approximately 300m east of the site,
- **Clayton North Primary School**, located approximately 250m west of the site, and
- **Monash Medical Centre**, located approximately 500m south of the site.

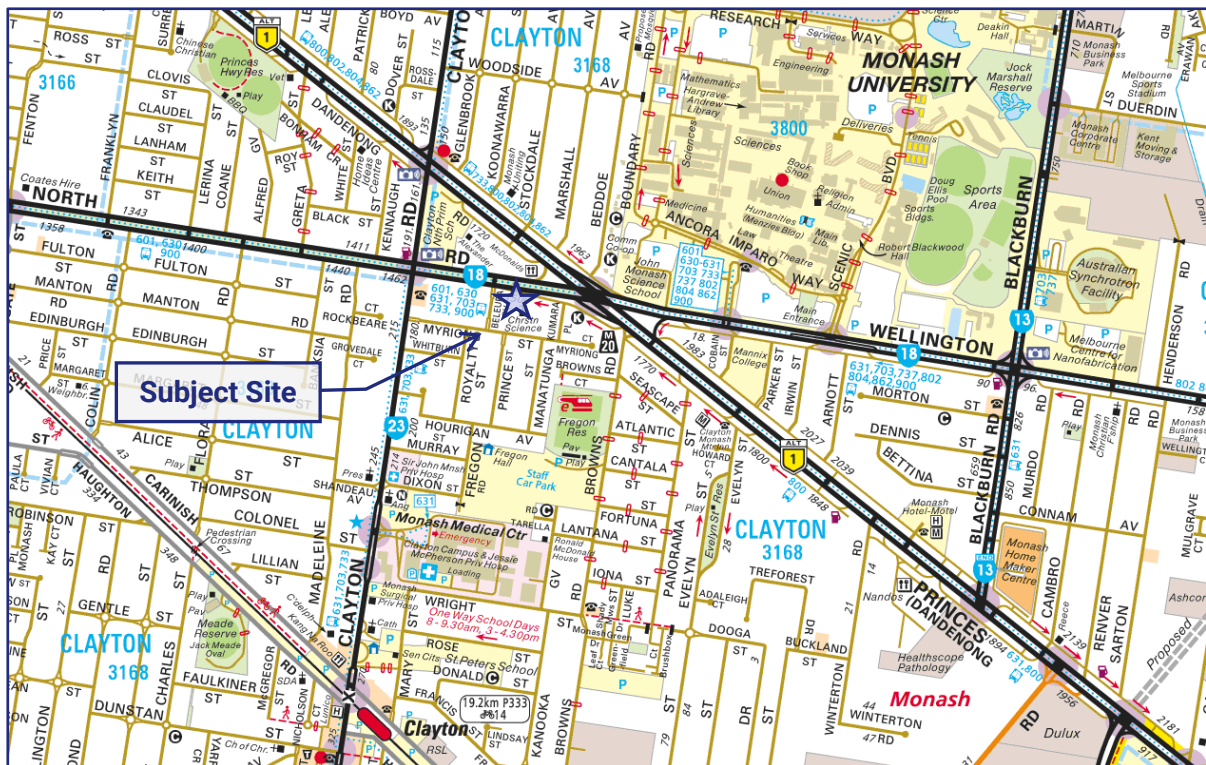


Figure 1: Locality Plan

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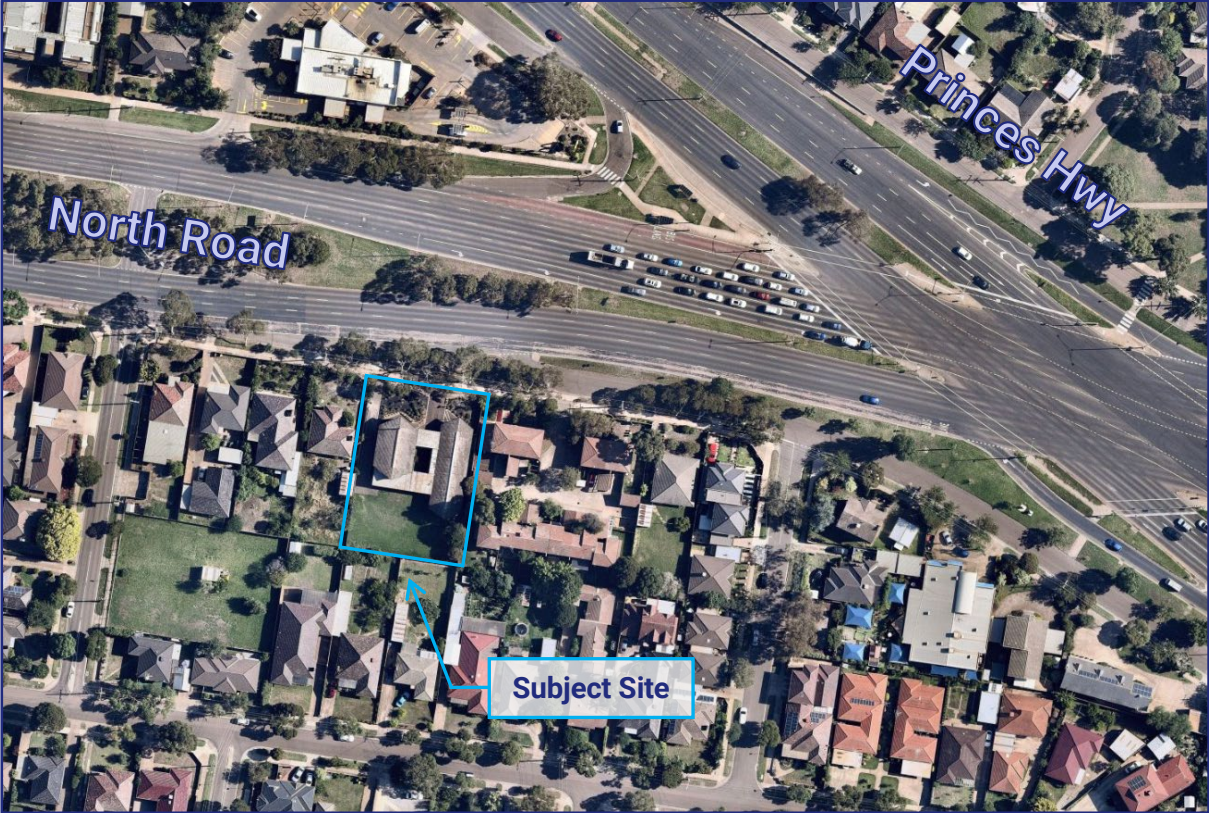


Figure 2: Aerial Photograph

Source: [www.nearmap.com](http://www.nearmap.com)



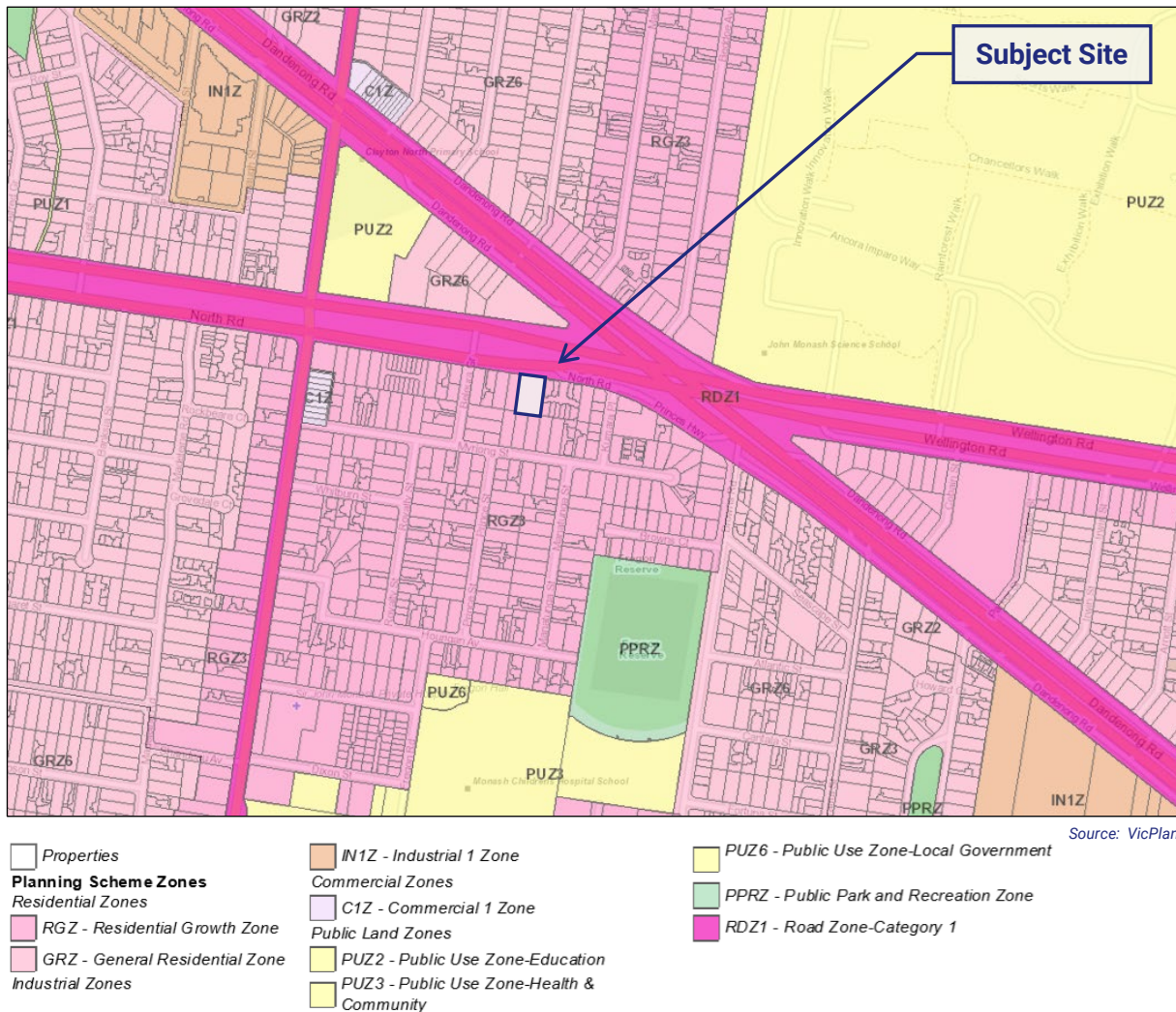


Figure 3: Land Use Zoning Map

### 3.2. Road Network

North Road is a Department of Transport declared Arterial Road and Road Zone Category 1 under the Planning Scheme. North Road generally extends in an east-west direction.

In the vicinity of the site, North Road provides four traffic lanes in each direction, separated by a central median. The kerbside lanes are designated Bus Lanes between 6:30-9:30am and 4-6:30pm, Mon-Fri.

In the vicinity of the site, a posted speed limit of 70km/h applies to Princes Highway. A 40km/h school zone speed limit applies to the west of Beleura Grove.

Photographs of North Road are presented in Figure 4 and Figure 5.





*Figure 4: North Road – view east*



*Figure 5: North Road – view west*

### 3.3. Existing Parking Conditions

A parking inventory has been conducted by Traffix Group in order to establish the on-street parking conditions of the nearby area. The parking inventory was undertaken at 11am on 4<sup>th</sup> March, 2020.

The inventory area included on-street parking within a walking distance of up to approximately 200m from the site as presented at Figure 6. The detailed breakdown of the parking inventory is provided at Appendix B.

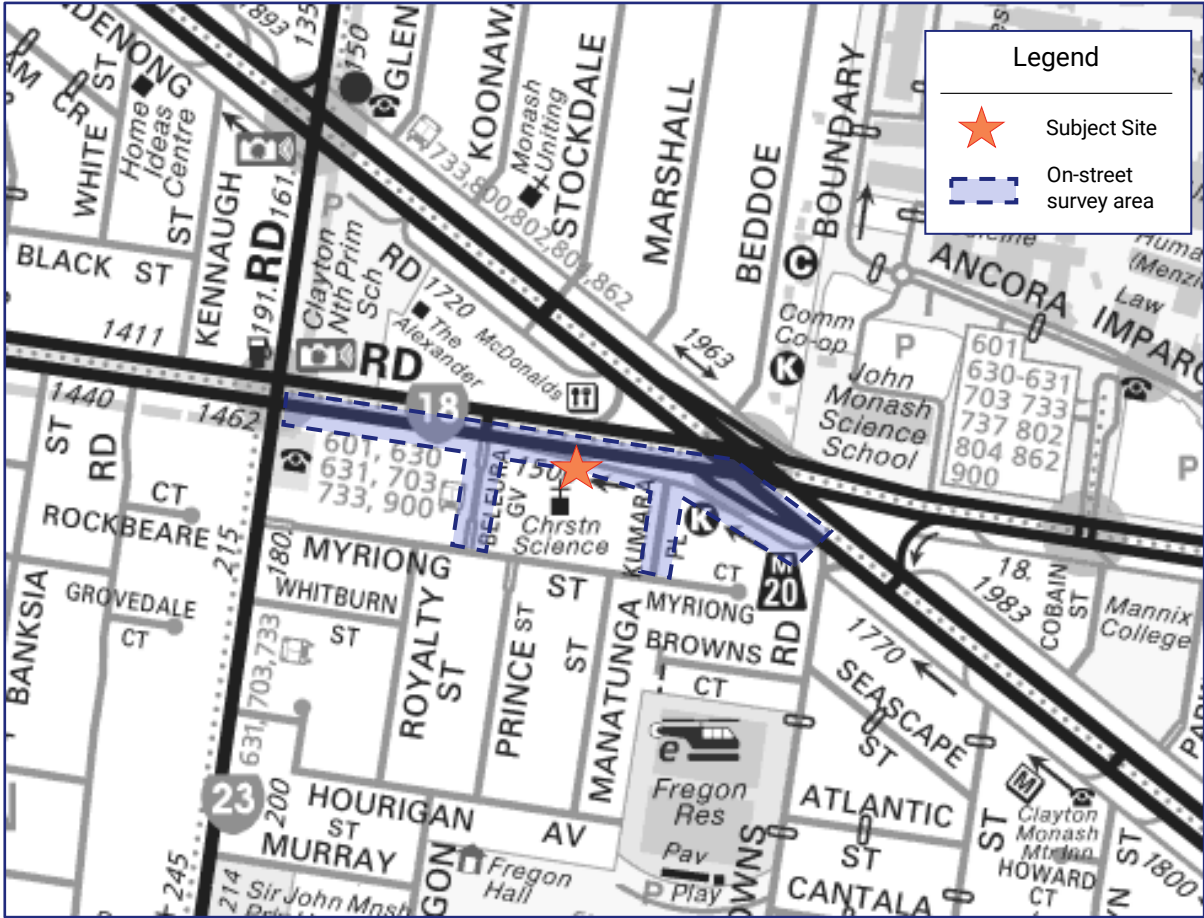


Figure 6: Parking Survey Area

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The overall inventory area includes 67 on-street car spaces available to the general public. On-street parking in close proximity to the site is generally limited to short-term 1/2P or 1P parking. A limited amount of unrestricted parking is available along the south side of North Road (between Princes Highway and Beleura Grove).



### 3.4. Alternative Transport Modes

#### 3.4.1. Public Transport

The site is located within the PPTN area as shown in Figure 8 and as such has access to a number of public transport services. The site has access to numerous bus services connecting the site to Monash University, Clayton Activity Centre and Clayton Station, the Oakleigh Activity Centre and Chadstone Shopping Centre.

The existing available public transport services within close proximity of the site are shown in Figure 7 and a summary is provided in Table 1.

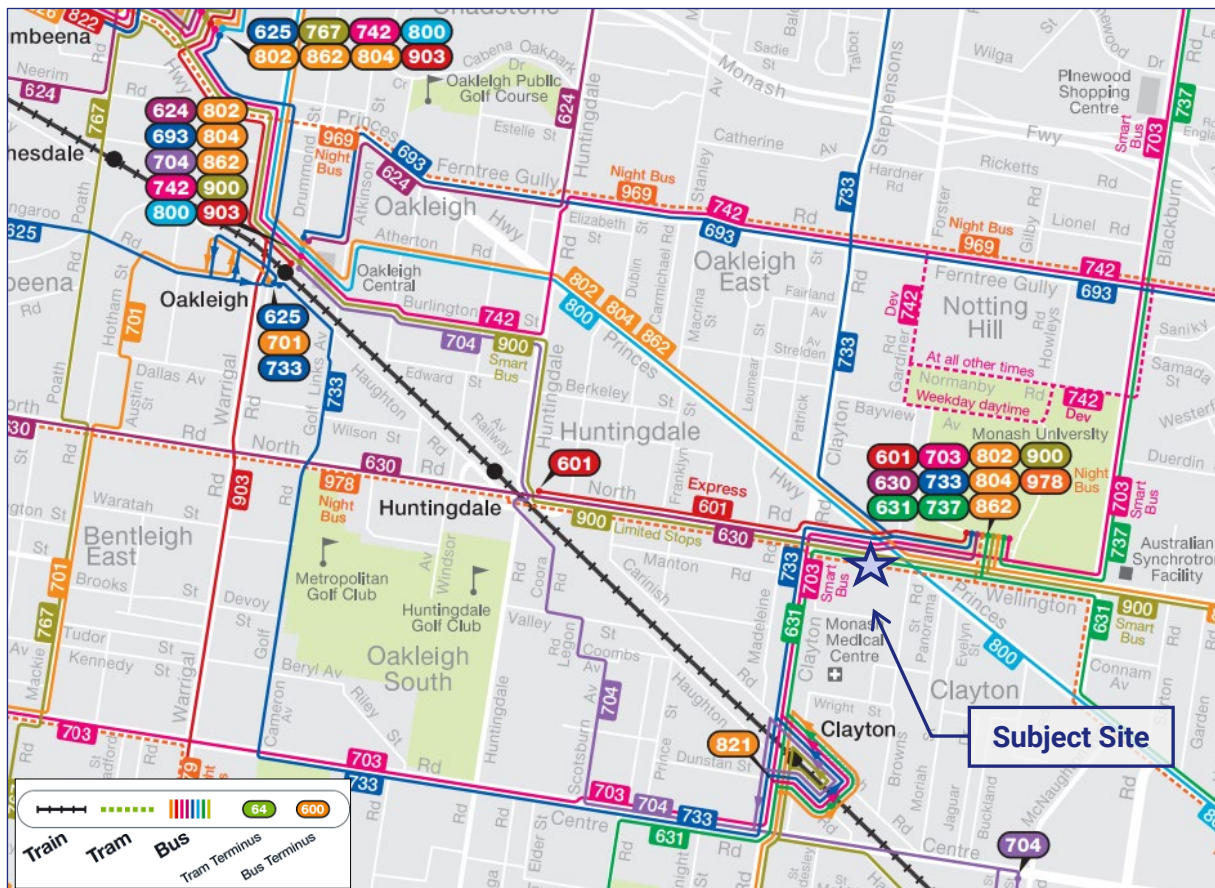


Figure 7: Public Transport Map

Source: Public Transport Victoria, [ptv.vic.gov.au](http://ptv.vic.gov.au)

We note that the range of public transport services is anticipated to increase as per Plan Melbourne 2017-2050. The Victorian Government has proposed to build the Suburban Rail Loop which will include the construction of a new railway station at Monash University. Whilst the project remains unfunded at this stage (current commitment is to start construction by 2022), in the event that the project is realised, it will provide a direct connection to surrounding railway lines and activity centres.

Overall, the proximity of the site to convenient public transport services linking the site to activity centre and train services reduces the site’s dependence on motor vehicles as a mode of transport compared to similar development in an outer suburban area.

Table 1: Summary of Public Transport Services

| Service                                                      | Between                      | Via                                       | Operating Times (Frequency)     |                                |                              |
|--------------------------------------------------------------|------------------------------|-------------------------------------------|---------------------------------|--------------------------------|------------------------------|
|                                                              |                              |                                           | Weekday                         | Saturday                       | Sunday                       |
| <b>Princes Highway – approximately 150m east of the site</b> |                              |                                           |                                 |                                |                              |
| Bus Route 800                                                | Dandenong & Chadstone        | Princes Highway & Oakleigh                | 6:30am-7:35pm<br>20-45 minutes  | 7:50am-4:15pm<br>20-60 minutes | Does not operate             |
| Bus Route 802                                                | Dandenong & Chadstone        | Mulgrave & Oakleigh                       | 7:10am-6:45pm<br>40 minutes     | Does not operate               | Does not operate             |
| Bus Route 804                                                | Dandenong & Chadstone        | Whealers Hill & Oakleigh                  | 6:40am-6:10pm<br>40 minutes     | 6:55am-3:25pm<br>60 minutes    | Does Not Operate             |
| Bus Route 862                                                | Dandenong & Chadstone        | North Dandenong & Oakleigh                | 7:05am-9:40pm<br>40 minutes     | 7:30am-9:45pm<br>60 minutes    | 9:35am-9:45pm<br>60 minutes  |
| <b>North Road – running past the subject site</b>            |                              |                                           |                                 |                                |                              |
| Bus Route 630                                                | Elwood & Monash University   | Gardenvale & Ormond & Huntingdale         | 6:30am-10:00pm<br>10-30 minutes | 6:45am-8:50pm<br>30 minutes    | 8:25am-8:25pm<br>40 minutes  |
| Bus Route 631                                                | Southland & Waverley Gardens | Clayton & Monash University               | 6:15am-9:40pm<br>30-60 minutes  | 7:05am-9:40pm<br>40-60 minutes | 9:10am-10:10pm<br>60 minutes |
| Bus Route 703                                                | Middle Brighton & Blackburn  | Bentleigh & Clayton & Monash University   | 5:40am-9:30pm<br>15-45 minutes  | 8:10am-9:10pm<br>20-60 minutes | 9:15am-9:15pm<br>60 minutes  |
| Bus Route 733                                                | Oakleigh & Box Hill          | Clayton & Monash University & Mt Waverley | 6:25am-9:40pm<br>15-30 minutes  | 7:30am-9:30pm<br>30-40 minutes | 9:30am-9:30pm<br>60 minutes  |



| Service                                                                | Between                         | Via                                    | Operating Times (Frequency)     |                              |                             |
|------------------------------------------------------------------------|---------------------------------|----------------------------------------|---------------------------------|------------------------------|-----------------------------|
|                                                                        |                                 |                                        | Weekday                         | Saturday                     | Sunday                      |
| <b>Monash University – located approximately 650m east of the site</b> |                                 |                                        |                                 |                              |                             |
| Bus Route 601                                                          | Huntingdale & Monash University | -                                      | 7:00am-9:40pm<br>8 minutes      | Does not operate             | Does not operate            |
| Bus Route 737                                                          | Croydon & Monash University     | Boronia & Knox City SC & Glen Waverley | 5:55am-9:00pm<br>20-45 minutes  | 6:55am-9:05pm<br>30 minutes  | 7:55am-9:10pm<br>30 minutes |
| Bus Route 900                                                          | Stud park SC & Caulfield        | Monash University & Chadstone          | 5:25am-12:14am<br>10-30 minutes | 6:20am-12:10am<br>30 minutes | 7:45am-9:40pm<br>30 minutes |
| Bus Route 978 <sup>Note 1</sup>                                        | Elsternwick & Dandenong         | Mulgrave                               | Does not operate                | 1:30am-5:40am<br>60 minutes  | 1:30am-6:40am<br>60 minutes |
| Note 1: Night bus                                                      |                                 |                                        |                                 |                              |                             |

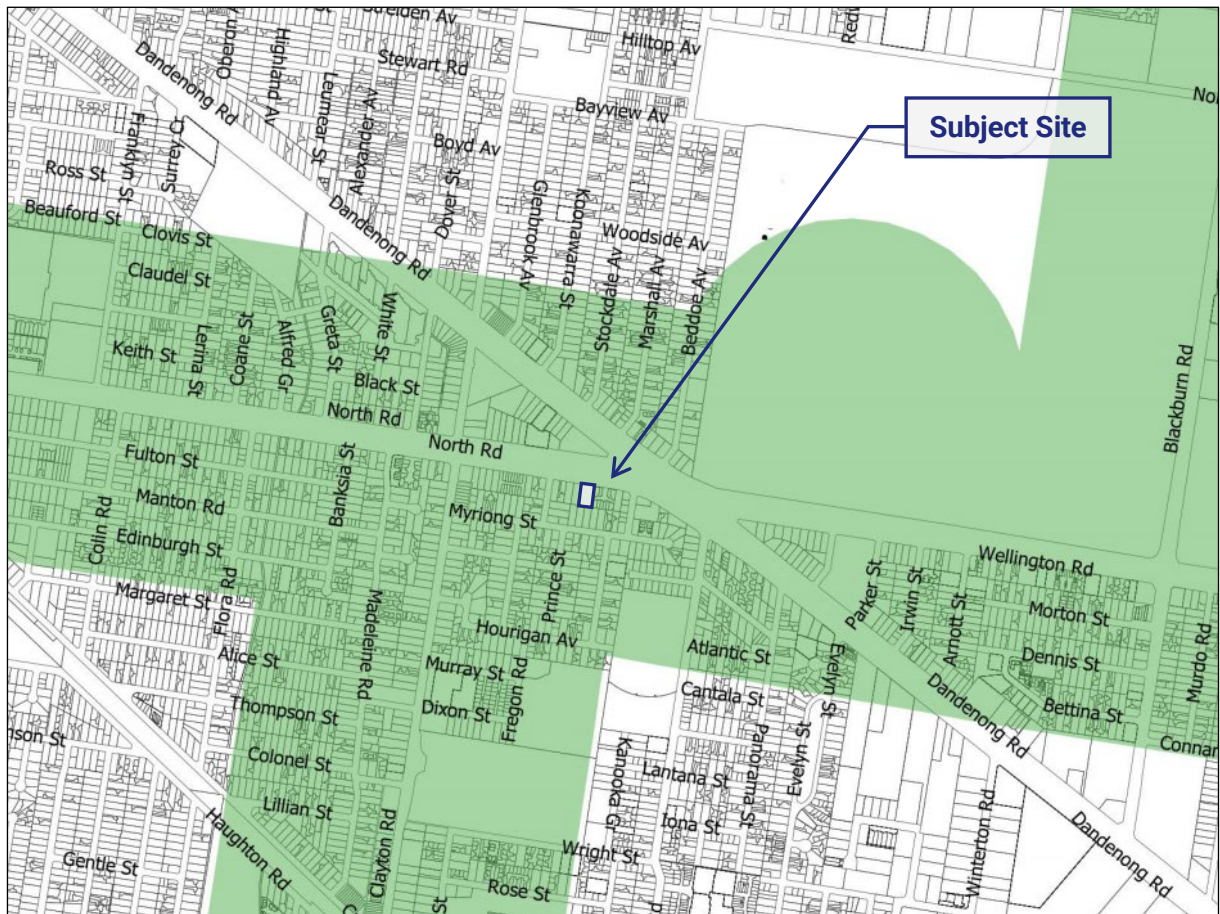


Figure 8: Principal Public Transport Network Map

Source: Principal Public Transport Network

### 3.4.2. Bicycle Infrastructure & Walkability

The City of Monash is well serviced by the Principal Bicycle Network (PBN) with on-road and off-road bicycle paths directly linking the City of Monash with surrounding municipalities and the city.

As detailed in Figure 9, the subject site has access to bicycle infrastructure with informal bicycle routes along major and minor roads in the vicinity of the site including an off-road facility along North Road.

The site is located 1.5km from Clayton Station and Clayton Activity Centre (a 15-20 minute walk).



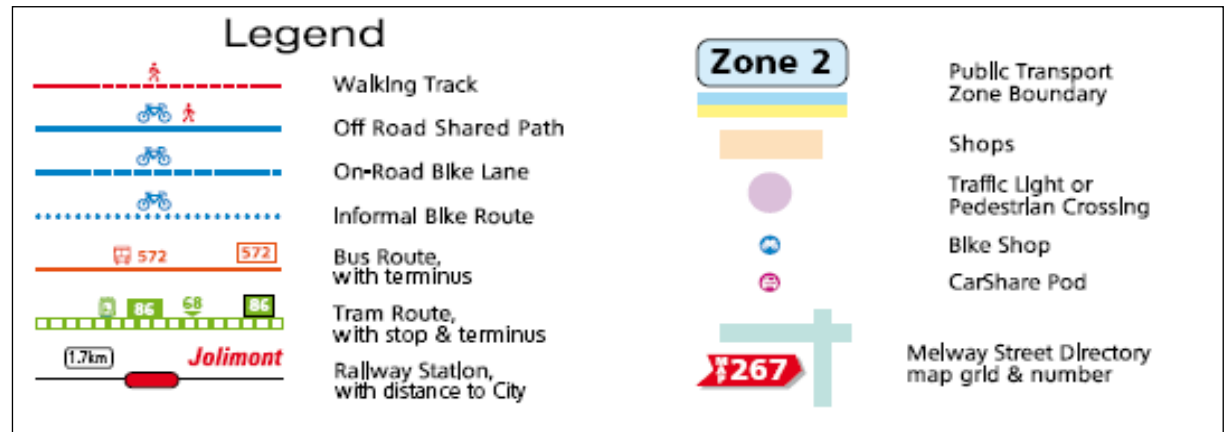


Figure 9: TravelSmart Map

Source: TravelSmart Map sourced from City of Monash Council

## **4. Traffic Engineering Assessment**

### **4.1. Statutory Car Parking Assessment**

'Student Accommodation' is not a defined land-use category under Clause 73.03 of the Planning Scheme. However, the development proposed generally fit the definition of 'Residential Building' under Clause 73.03.

The Planning Scheme sets out the parking requirements for new developments under Clause 52.06.

The purpose of Clause 52.06 is:

- *To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

Clause 52.06-5 states:

*The car parking requirement specified for a use listed in Table 1 does not apply if:*

- *a car parking requirement for the use is specified under another provision of the planning scheme; or*
- *a schedule to the Parking Overlay specifies the number of car parking spaces required for the use.*

In this instance, further guidance regarding car parking requirement for student accommodation is specified under Clause 22.10 of the Monash Planning Scheme (Council's Student Accommodation Policy).

Clause 22.10-4 states:

#### **Car parking**

*Car spaces should be provided on site at the rates of:*

- *Min. 0.3 car spaces per bed for sites located within Preferred Locations.*
- *Min. 0.4 car spaces per bed for sites located outside of Preferred Locations.*

*The Preferred Location for student accommodation should satisfy one or more of the following criteria:*

- *Within 1500 metres of a tertiary educational institution.*

- *Within 800 metres of a Railway Station.*
- *Within 800 metres of a Principal, Major or a larger Neighbourhood Activity Centre.*
- *Within 400 metres of a bus route that provides access to a tertiary educational institution.*

The site is located within the Preferred Location, accordingly, the proposed development has a general requirement to provide car parking at a rate of at least 0.3 spaces per bed.

The assessment of car parking requirements associated with the proposed development is set out in Table 2.

*Table 2: Statutory Car Parking Assessment – Clause 22.10-4 of Monash Planning Scheme*

| <b>Proposed Use</b>                          | <b>No.</b> | <b>Car Parking Rate<br/>(Clause 22.10-4)</b> | <b>Car Parking Requirement<br/>(Note 1)</b> | <b>Car Parking Provision</b> | <b>Shortfall (-)<br/>/Surplus (+)</b> |
|----------------------------------------------|------------|----------------------------------------------|---------------------------------------------|------------------------------|---------------------------------------|
| Residential Building (Student Accommodation) | 106 beds   | At least 0.3 spaces per bed                  | 31 car spaces                               | 31                           | 0                                     |

Note 1: Clause 52.06-5 specifies that where a car parking calculation results in a requirement that is not a whole number, the number of spaces should be rounded down to the nearest whole number.

Under Clause 22.10-4, the general car parking requirement for the development is 31 car spaces. The provision of complies with this requirement, and as such, no car parking reduction is required.

## **4.2. Review of Car Parking Layout and Access Arrangements**

A total of 31 car spaces are provided within a basement carpark with vehicle access via a ramp to North Road.

The car spaces are a combination of 18 car spaces provided via stacker arrangements, and 13 standard car spaces.

Traffic Group has provided design advice to the project architect to achieve a satisfactory carpark layout. The proposed parking layout has been assessed under the following guidelines:

- Clause 52.06-9 (Design Standards for car parking) of the Planning Scheme,
- AS2890.1-2004 – Part 1: Off-street car parking, where relevant, and
- AS2890.6-2009 – Part 6: Off-street car parking for people with disabilities.

Key elements of the design include:

### **Design Standard 1 – Accessways**

- Vehicle access to the site is provided via a 6.5m wide accessway to North Road which accords with the requirements of Clause 52.06-9 and AS2890.1-2004 for a two-lane two-way accessway.

- A minimum headroom clearance of 2.3m is provided along the entry ramp to basement level 1 exceeding the requirements under Clause 52.06-9 and AS2890.1-2004.
- All vehicles will be able to enter and exit the site in a forwards direction in accordance with Clause 52.06-9.
- A pedestrian sight triangle is provided on the west side of the accessway, in accordance with Clause 52.06-9.
- A pedestrian sight triangle is not required on the east side of the accessway due to the width of the accessway (i.e. sight triangle achieved within the accessway).

### **Design Standard 2 – Car Parking Spaces**

- Car space dimensions accord with Clause 52.06-9 with dimensions provided at:
  - 2.6m wide x 4.9m long with at least 6.4m wide access aisle, and
  - 2.8m wide x 4.9m long with at least 5.8m wide access aisle.
- A 1m blind aisle extension is provided at the end of the carpark aisle.
- Car spaces located adjacent to walls or obstructions are provided with 300mm clearance in accordance with Diagram 1 of Clause 52.06-9.
- Column locations comply with Clause 52.06-9.
- Access to and from the critical car spaces within the basement carpark have been checked for access by the B85 design car (specified at Appendix B of AS2890.1-2004) and found to be acceptable.

### **Design Standard 3 – Gradients**

- The ramp grades comply with the requirements of Clause 52.06-9 including the provision of 1:10 grade for the first 5m into the site.
- Grade changes are provided in accordance with Clause 52.06-9.
- A maximum grade of 1:4.5 (22.5%) is provided through the mid-section of the ramp to the basement carpark, which accords with Clause 52.06-9 for a private carpark.
- A maximum grade of 1:16 is provided across car spaces in accordance with AS2890.1-2004.

### **Design Standard 4 – Mechanical Parking**

The proposal includes 18 car spaces within 9 single Klaus Multibase 2072i independent stacker units.

A copy of the manufacturer's specification sheet for the Klaus Multibase 2072i is attached at Appendix C.

Design Standard 4 of Clause 52.06-9 applies to mechanical parking and specifies:

#### ***Design standard 4: Mechanical parking***

- *Mechanical parking may be used to meet the car parking requirement provided:*
- *At least 25 per cent of the mechanical car parking spaces can accommodate a vehicle clearance height of at least 1.8 metres.*



- Car parking spaces that require the operation of the system are not allocated to visitors unless used in a valet parking situation.
- The design and operation is to the satisfaction of the responsible authority.

Table 4 reviews the stacker design in detail.

Table 3: Review of Car Stacker Specifications

| Characteristic                                        | Specifications                                               |
|-------------------------------------------------------|--------------------------------------------------------------|
| Suitable System                                       | Klaus Multibase 2072i-195                                    |
| Type of system                                        | 2 level independent parking system (with pit)                |
| Specifications Attached                               | Appendix C                                                   |
| Number of spaces                                      | 18                                                           |
| Grid Unit                                             | 2.8m                                                         |
| Usable Platform Width                                 | 2.5m                                                         |
| Minimum Access Aisle Width Behind Stacker             | 5.8m for 1 stacker, 6.4m for the remaining 8 stacker         |
| Unit length                                           | 5.2m (Accommodates a vehicle length of up to 5.0m)           |
| Headroom Clearance                                    | 3.54m                                                        |
| Pit Depth                                             | 2.0m                                                         |
| Car Height Lower Level                                | 1.8m                                                         |
| Car Height Upper Level                                | 1.5m                                                         |
| % of mechanical spaces accommodating 1.8m car heights | 9/18 (50% - complies with Clause 52.06-9, Design Standard 4) |

Although the car stacker units have a usable platform width of 2.5m, the overall unit is 2.8m wide, with no obstructions over 100mm in height in this area. As such, each stacker unit is effectively a 2.8m wide space. Spaces are mostly provided with a 6.4m wide aisle, with the only exception being space 14 and 15, which has a 5.8m wide aisle. In any event, as the space has an effective width of 2.8m, this still complies with the car space dimensions of Clause 52.06-9.

Access to and from the car stacker spaces has been checked using a turning template based on the B85 design car presented in AS2890.1-2004 and we are satisfied that vehicles will be able to safely manoeuvre to and from these spaces. A copy of the swept path diagram which includes any critical car spaces is provided at Appendix D.

Significantly, all on-site mechanical car spaces will be available to residents who will become familiar with the proposed layout. We are satisfied that the stacker arrangements are appropriate.

### 4.3. Bicycle Parking Requirement

The bicycle parking requirements for the proposed student accommodation is set out under Clause 22.10 and Clause 52.34.

Clause 22.10-4 of the Monash Planning Scheme states:

*Bicycle parking spaces should be provided at a rate of 1 bicycle space for every 2 students.*

Clause 52.34 of the Planning Scheme specifies bicycle parking requirements for new developments and changes in use in Table 1. The table below details the statutory bicycle parking requirement of the proposed student accommodation.

Table 4: Statutory Bicycle Parking Assessment - Clause 22.10 and Clause 52.34

| Planning Provision                                          | No.      | Bicycle Parking Rate                                           |                                                                | No. of Bicycle Spaces Required |
|-------------------------------------------------------------|----------|----------------------------------------------------------------|----------------------------------------------------------------|--------------------------------|
|                                                             |          | Resident                                                       | Visitor                                                        |                                |
| Clause 22.10<br>Student Accommodation                       | 106 beds | 1 per 2 beds                                                   |                                                                | 53 resident<br>N/A visitor     |
| Clause 52.34<br>Residential building (other than specified) |          | 1 per 10 lodging rooms in developments of four or more storeys | 1 per 10 lodging rooms in developments of four or more storeys | 11 resident<br>11 visitor      |

The proposed development has the following bicycle parking requirements:

- **Clause 22.10** – 53 resident spaces and no specific allocation for visitors.
- **Clause 52.34** – 11 resident spaces and 11 visitor spaces.

A total of 57 bicycle spaces is provided on-site including 53 secure spaces and 4 open spaces at ground level, accordingly the development exceeds the minimum bicycle parking requirements of Clause 22.14 and Clause 52.34.

The bicycle parking spaces will be provided via 'Ned Kelly' wall mounted bicycle racks and 'Flat Top' horizontal rails. The space allowed for bicycle parking on the plans satisfies the specifications of the Bicycle Victoria Bicycle Parking Handbook and AS2890.3-2015 and is satisfactory.

Based on the above, we are satisfied with the provision of bicycle parking in this development.



## 4.4. Loading and Waste Collection

### Loading

Clause 65.01 of the Planning Scheme specifies that:

*Before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate:*

- *The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.*

The proposed student accommodation provides 106 studio apartments. The apartments may require loading from time-to-time associated with removal trucks or vans. Given the size of the apartments, these trucks are likely to be small trucks or vans. We are satisfied that any loading activities can be undertaken on-street in the nearby area as required and is acceptable.

Based on the above, we are satisfied that a dedicated on-site loading bay is not necessary and that suitable alternatives are available on-street in close proximity to the site.

### Waste Collection

Waste bins will be stored in a bin storage room at basement level. It is proposed that waste collection will occur on-site within basement level by a private contractor utilising the rear loading waste truck (typically 6.4m long x 2.08m high waste truck vehicle). The waste collection vehicle will prop on the accessway and transfer the waste bins to the truck and back to the bin store.

Swept path diagrams demonstrating the 6.4m x 2.08m waste collection vehicle undertaking entry and exit movements in a forwards direction are provided at Appendix C.

Based on the above, we are satisfied the loading and waste collection arrangements are acceptable from a traffic engineering perspective.

## 4.5. Traffic Impacts

The proposed student accommodation is expected to generate traffic movements at a rate of 3 vehicle trip ends per apartment with a car space per day. This is reflective of the fact that students are unlikely to use their car to travel to Monash University. This equates to a daily traffic generation of 93 vehicle trip ends per day for the 31 studio apartments allocated a car space.

Typically, 10% of this traffic can be expected in the AM and PM commuter peak hours, which equates to 9 vehicle trip ends in each peak hour. All of the traffic accessing the site will use North Road and there is unlikely to be any significant traffic within the local street network.

Based on the above, we are satisfied that the level of traffic generated by the proposed development is low, spread throughout the day, residential in nature and will not have a detrimental impact on the operation or safety of North Road.

## **5. Conclusions**

Having undertaken a detailed traffic engineering assessment for the proposed student accommodation development at 1494-1496 North Road, Clayton, we are of the opinion that:

- a) 'student accommodation' use is not a defined lane use under Clause 73.03 of the Planning Scheme, although it generally falls under the classification of a residential building, and the provision of car parking is the satisfaction of the Responsible Authority,
- b) Monash City Council has a local policy in regards to Student Housing and Clause 22.10-4 of the Monash Planning Scheme specifies that car parking should be provided at a minimum rate of 0.3 car spaces per bed, resulting in a requirement for 31 car spaces,
- c) the provision of 31 car spaces complies with the requirements of Clause 22.10-4,
- d) on-site bicycle parking is provided in excess of the statutory requirements under Clause 22.10-4 and Clause 52.34 and the bicycle parking layout complies with AS2890.3-2015,
- e) loading activities will be minimal and can be accommodated on-street in the nearby area, including along North Road and is acceptable,
- f) waste collection will be collected on-site within the basement carpark,
- g) the level of traffic generated as a result of this proposal is low, spread throughout the day, residential in nature and have a negligible impact on the operation or safety of North Road or the surrounding road network, and
- h) there are no traffic engineering reasons why a planning permit for the proposed student accommodation at 1494-1496 North Road, Clayton, should be refused, subject to appropriate conditions.



# Appendix A

## Development Plans













| REVISION No | Date       | Description | By |
|-------------|------------|-------------|----|
| A           | 09/07/2020 | RFI         | VL |

**CLIENT**  
The North Road Project Pty Ltd

**ADDRESS**  
1494-1496 North Road, Clayton

**PROJECT**  
Student Accommodation

**TITLE**  
Sections 02

|                             |                       |
|-----------------------------|-----------------------|
| <b>DRAWING NO.</b> TP-17    | <b>REVISION NO.</b> A |
| <b>DATE</b> 09-07-2020      | <b>SCALE</b> 1:100    |
| <b>DRAWN BY</b> AXVL        | <b>BOX NO.</b> 0981   |
| <b>CAD NO.</b> 0981 - TP-17 |                       |

**TOWN PLANNING**

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ACN 164 722 383 Copyright ©

**ALTA ARCHITECTURE**

9/07/2020 11:50:24 AM















# Appendix B

## Parking Inventory

| Surveyed By: James Young               |                                         | Survey Dates & Times: See below            |                                      |                              |
|----------------------------------------|-----------------------------------------|--------------------------------------------|--------------------------------------|------------------------------|
| Location                               |                                         | Restriction                                | Capacity<br>Min - Max                | Wednesday 4th<br>March, 2020 |
|                                        |                                         |                                            |                                      | 11am                         |
| <b>ON-STREET CARPARKING</b>            |                                         |                                            |                                      |                              |
| Map<br>Ref.                            | <b>DANDENONG SOUTHERN SERVICE ROAD</b>  |                                            |                                      |                              |
|                                        | <b>North Side</b>                       |                                            |                                      |                              |
| -                                      | Entire Length                           | No Stopping                                | -                                    | 0                            |
| <b>South Side</b>                      |                                         |                                            |                                      |                              |
| A                                      |                                         | No Stopping                                | -                                    | 0                            |
| A                                      | East End to Kumara Place                | 1P 8am-6pm Mon-Fri                         | 14                                   | 5                            |
| A                                      |                                         | No Stopping                                | -                                    | 0                            |
| A                                      | Kumara Place to West End                | No Stopping                                | -                                    | 0                            |
| A                                      |                                         | 1P 8am-6pm Mon-Fri                         | 7                                    | 7                            |
| A                                      |                                         | No Stopping                                | -                                    | 0                            |
| <b>DANDENONG SOUTHERN SERVICE ROAD</b> |                                         |                                            | <b>Capacity</b>                      | <b>21 - 21</b>               |
|                                        |                                         |                                            | <b>Total Number of Cars Parked</b>   | <b>12</b>                    |
|                                        |                                         |                                            | <b>Total Number of Vacant Spaces</b> | <b>9</b>                     |
| Map<br>Ref.                            | <b>NORTH ROAD</b>                       |                                            |                                      |                              |
|                                        | <b>South Side</b>                       |                                            |                                      |                              |
| B                                      | Service Road to WB #1496 (Subject Site) | No Stopping                                | -                                    | 0                            |
| B                                      |                                         | Unrestricted                               | 3                                    | 1                            |
| B                                      | WB #1496 to Beleura Grove               | No Stopping                                | -                                    | 0                            |
| B                                      |                                         | Bus Stop                                   | -                                    | 0                            |
| B                                      |                                         | Unrestricted                               | 2                                    | 0                            |
| B                                      |                                         | No Stopping                                | -                                    | 0                            |
| B                                      | Beleura Grove to Clayton Road           | No Stopping                                | -                                    | 0                            |
| B                                      |                                         | Clearway 6:30am-9:30am, 4pm-6:30pm Mon-Fri | 14                                   | 0                            |
| B                                      |                                         | No Stopping                                | -                                    | 0                            |
| <b>NORTH ROAD</b>                      |                                         |                                            | <b>Capacity</b>                      | <b>19 - 19</b>               |
|                                        |                                         |                                            | <b>Total Number of Cars Parked</b>   | <b>1</b>                     |
|                                        |                                         |                                            | <b>Total Number of Vacant Spaces</b> | <b>18</b>                    |



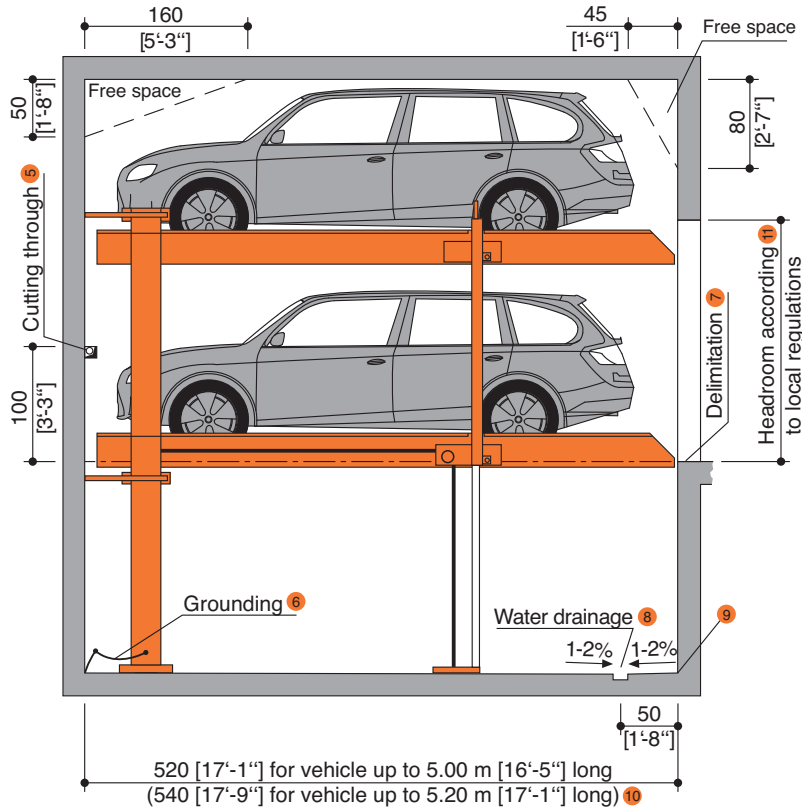
| Surveyed By: James Young                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                      | Survey Dates & Times: See below      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------|-----------------------|------------------------------|-------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------|
| Location                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                      | Restriction                          | Capacity<br>Min - Max | Wednesday 4th<br>March, 2020 |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | 11am                                 |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| Map<br>Ref.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>KUMARA PLACE</b>                                                                  |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | East Side                                                                            |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dandenong Road to Myriong Street                                                     | 1/2P 8am-6pm Mon-Fri                 | 8                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>West Side</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                      |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dandenong Road to Myriong Street                                                     | 1/2P 8am-6pm Mon-Fri                 | 8                     | 4                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Capacity</b>                      | <b>16 - 16</b>        | <b>16</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Total Number of Cars Parked</b>   |                       | <b>4</b>                     |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Total Number of Vacant Spaces</b> |                       | <b>12</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| Map<br>Ref.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>BELEURA GROVE</b>                                                                 |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | East Side                                                                            |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dandenong Road to Myriong Street                                                     | 1/2P 8am-6pm Mon-Fri                 | 6                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>West Side</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                      |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dandenong Road to Myriong Street                                                     | 1/2P 8am-6pm Mon-Fri                 | 5                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                      | No Stopping                          | -                     | 0                            |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>BELEURA GROVE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                      | <b>Capacity</b>                      | <b>11 - 11</b>        | <b>11</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Total Number of Cars Parked</b>   |                       | <b>0</b>                     |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Total Number of Vacant Spaces</b> |                       | <b>11</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      | <b>Percentage Occupancy</b>          |                       | <b>0%</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>SUMMARY =&gt; ON-STREET CARPARKING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                      |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>Car Parking Supply</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                      |                                      | <b>67 - 67</b>        | <b>67</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>Total Number of Cars Parked</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                      |                                      |                       | <b>17</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>Total Number of Vacant Spaces</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                      |                                      |                       | <b>50</b>                    |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <b>Percentage Occupancy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                      |                                      |                       | <b>25%</b>                   |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| Note: Public parking includes spaces that are available to the general public and excludes 'No Stopping', 'Loading Zones' and 'No Parking' areas, etc., during the relevant enforcement periods                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                      |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| <p><b>LEGEND: Public Parking</b></p> <table border="0"> <tr> <td>Not available to the general public</td> <td></td> </tr> <tr> <td>Not Available, illegally parked cars included in analysis</td> <td></td> </tr> <tr> <td>No Stopping/<br/>Other No Parking</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> |                                                                                      |                                      |                       |                              | Not available to the general public |  | Not Available, illegally parked cars included in analysis |  | No Stopping/<br>Other No Parking |  |  |  |
| Not available to the general public                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| Not Available, illegally parked cars included in analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
| No Stopping/<br>Other No Parking                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                      |                       |                              |                                     |                                                                                      |                                                           |                                                                                      |                                  |                                                                                      |  |                                                                                      |



# Appendix C

## Stacker Specification Sheet

**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

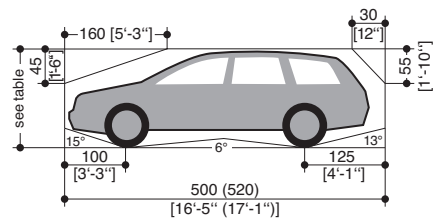
Dimensions: cm [ft] (1 cm = 0,393 in)  
 Weights: kg [lbs] (1 kg = 2.2 lbs)  
 Forces: kN [lbf] (1 kN = 224.8 lbf)  
 Temperature: °C [°F] (0° C = 32° F)

**Suitable for**

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

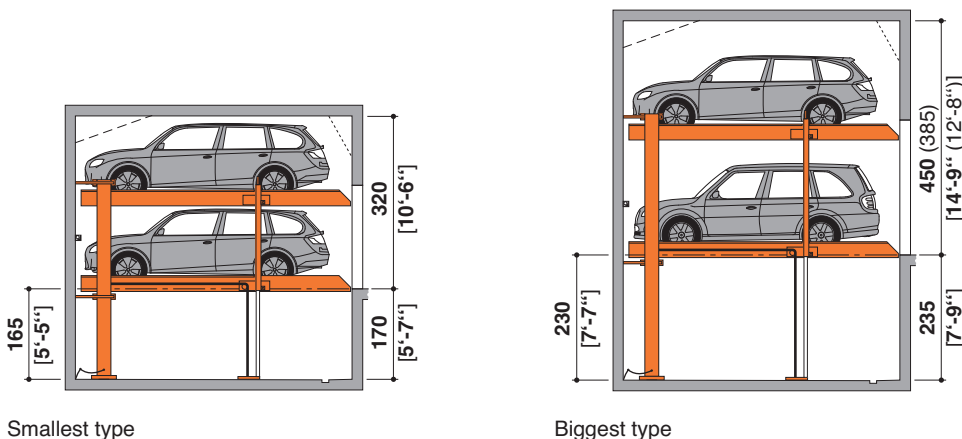
|            | Standard                     | Special <sup>2</sup>         |
|------------|------------------------------|------------------------------|
| Width      | 190 cm [6'-3"] <sup>4</sup>  | 190 cm [6'-3"] <sup>4</sup>  |
| Weight     | max. 2000 kg [max. 4400 lbs] | max. 2600 kg [max. 5730 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.



- Standard type
- Special system: maximum load for extra charge (maximum load for EB up to 3000 kg [6610 lbs] per place for extra charge).
- 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.
- Car width for platform width 230 cm [7'-7"]. If wider platforms are used it is also possible to park wider cars.
- For dividing walls: cutting through 10 x 10 cm [4" x 4"].
- Potential equalization from foundation grounding connection to system (provided by the customer).
- 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).
- Slope with drainage channel and sump.
- 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.
- 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"].
- Must be at least as high as the greatest car height + 5 cm [+ 2"].

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- Page 4 Width dimensions without door
- Page 5 Width dimensions without door
- Page 6 Width dimensions with door
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**Height dimensions for garage without door (basement garage)**

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Width  
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Width  
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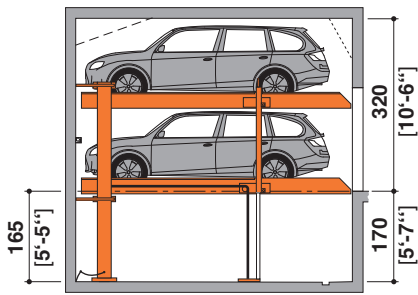
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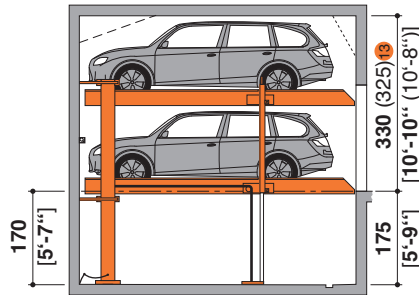
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Description

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



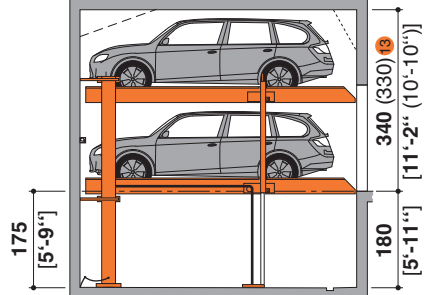
| Height       | Car height upper level | Car height lower level |
|--------------|------------------------|------------------------|
| 320 [10'-6"] | 150 [4'-11"]           | 150 [4'-11"]           |

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



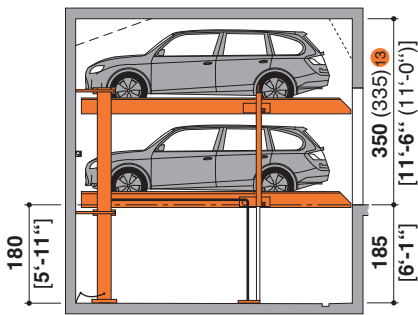
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 330 [10'-10"]  | 155 [5'-1"]            | 155 [5'-1"]            |
| (325) [10'-8"] | 150 [4'-11"]           | 155 [5'-1"]            |

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



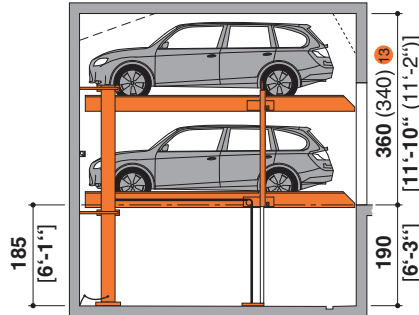
| Height          | Car height upper level | Car height lower level |
|-----------------|------------------------|------------------------|
| 340 [11'-2"]    | 160 [5'-3"]            | 160 [5'-3"]            |
| (330) [10'-10"] | 150 [4'-11"]           | 160 [5'-3"]            |

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



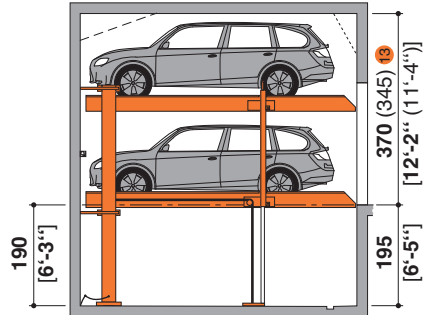
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 350 [11'-6"]   | 165 [5'-5"]            | 165 [5'-5"]            |
| (335) [11'-0"] | 150 [4'-11"]           | 165 [5'-5"]            |

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



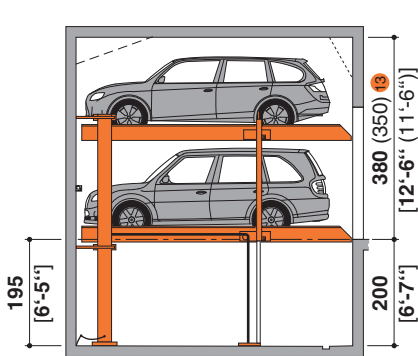
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 360 [11'-10"]  | 170 [5'-7"]            | 170 [5'-7"]            |
| (340) [11'-2"] | 150 [4'-11"]           | 170 [5'-7"]            |

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



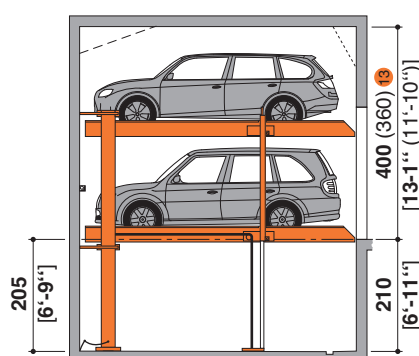
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 370 [12'-2"]   | 175 [5'-9"]            | 175 [5'-9"]            |
| (345) [11'-4"] | 150 [4'-11"]           | 175 [5'-9"]            |

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



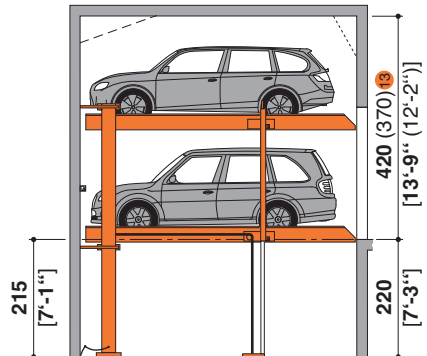
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 380 [12'-6"]   | 180 [5'-11"]           | 180 [5'-11"]           |
| (350) [11'-6"] | 150 [4'-11"]           | 180 [5'-11"]           |

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



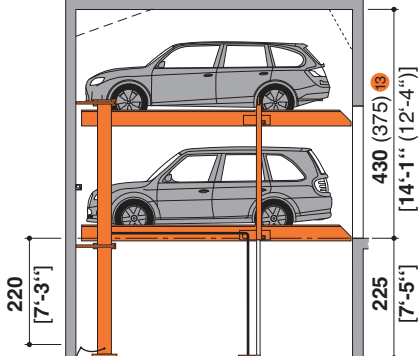
| Height          | Car height upper level | Car height lower level |
|-----------------|------------------------|------------------------|
| 400 [13'-1"]    | 190 [6'-3"]            | 190 [6'-3"]            |
| (360) [11'-10"] | 150 [4'-11"]           | 190 [6'-3"]            |

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



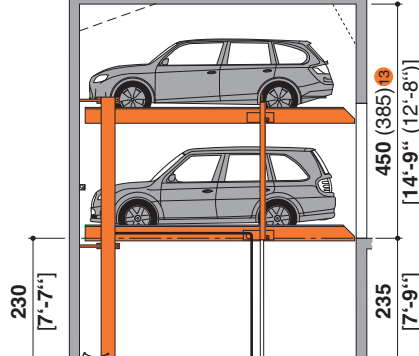
| Height         | Car height upper level | Car height lower level |
|----------------|------------------------|------------------------|
| 420 [13'-9"]   | 200 [6'-7"]            | 200 [6'-7"]            |
| (370) [12'-2"] | 150 [4'-11"]           | 200 [6'-7"]            |

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



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

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



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

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

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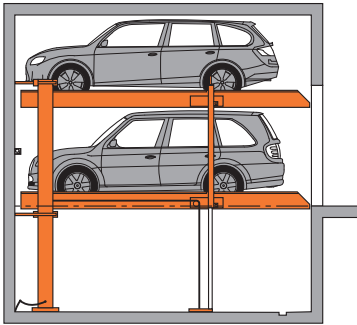
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Technical  
data

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To be performed by the customer

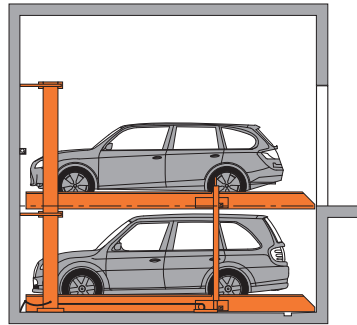
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Description

## Function

### System lifted



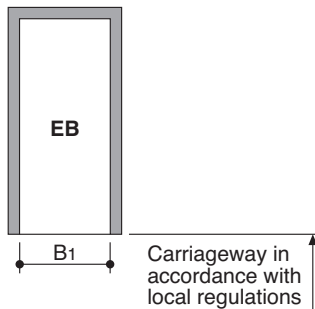
### System lowered



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

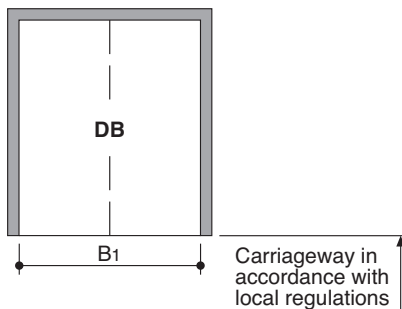
### Dividing walls

#### Single Platform (EB)



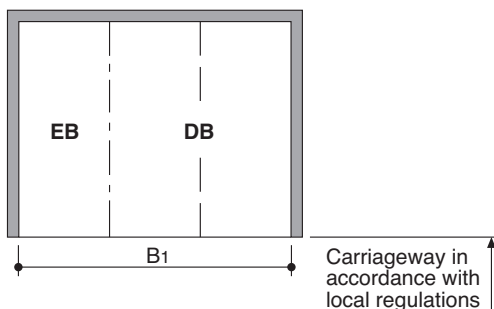
| Usable platform width | B1          |
|-----------------------|-------------|
| 230 [7'-7"            | 260 [8'-6"  |
| 240 [7'-10"           | 270 [8'-10" |
| 250 [8'-2"            | 280 [9'-2"  |
| 260 [8'-6"            | 290 [9'-6"  |
| 270 [8'-10"           | 300 [9'-10" |

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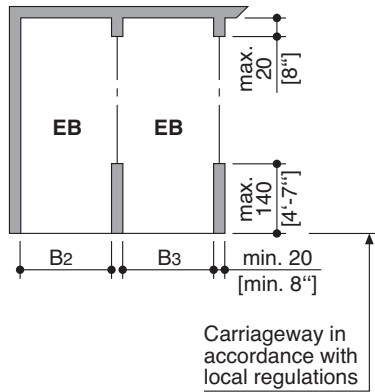
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## Width dimensions for garage without door (basement garage)

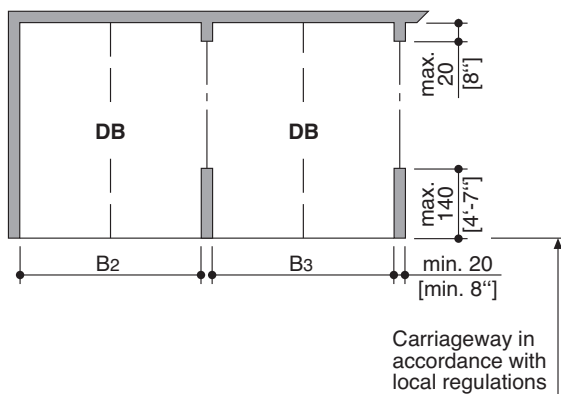
### Columns in pit

#### Single Platform (EB)



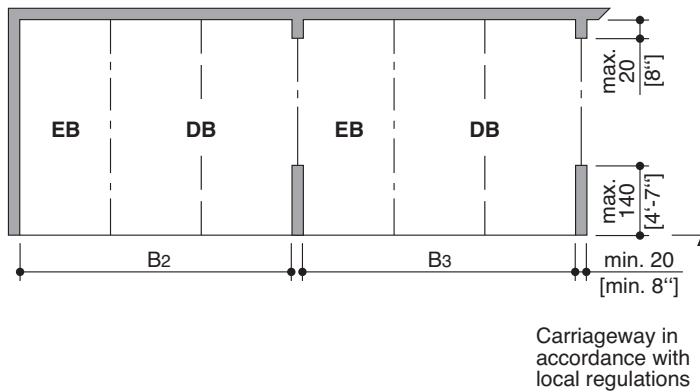
| Usable platform width | B2           | B3           |
|-----------------------|--------------|--------------|
| 230 [7'-7" ]          | 255 [8'-4" ] | 245 [8'-0" ] |
| 240 [7'-10" ]         | 265 [8'-8" ] | 255 [8'-4" ] |
| 250 [8'-2" ]          | 275 [9'-0" ] | 265 [8'-8" ] |
| 260 [8'-6" ]          | 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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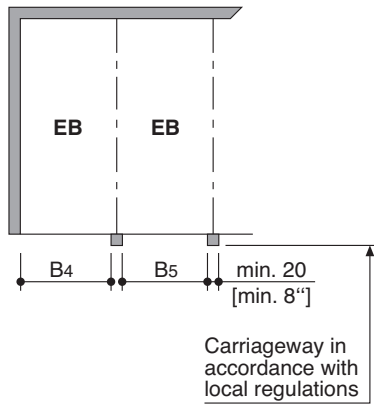
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## Width dimensions for garage without door (basement garage)

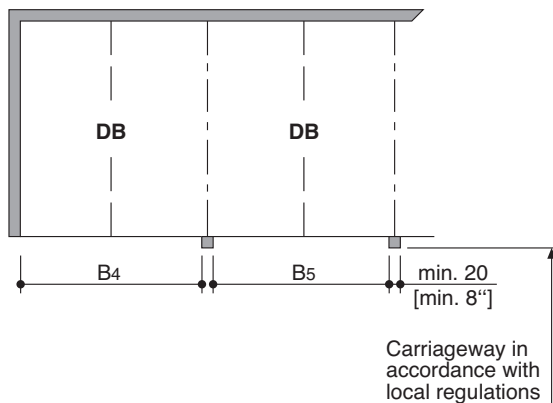
### Columns outside pit

#### Single Platform (EB)



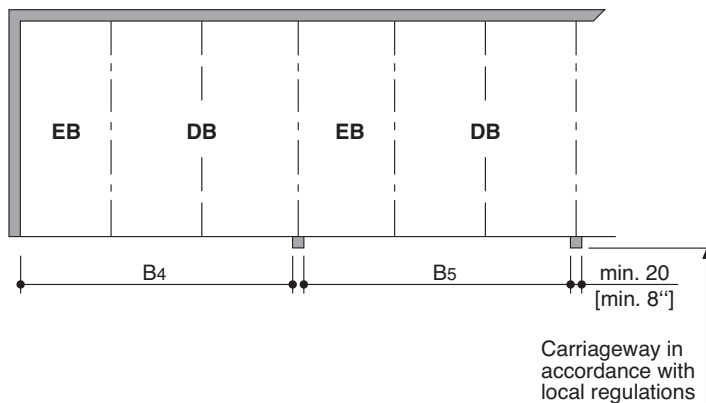
| Usable platform width | B4           | B5           |
|-----------------------|--------------|--------------|
| 230 [7'-7"]           | 250 [8'-2"]  | 240 [7'-10"] |
| 240 [7'-10"]          | 260 [8'-6"]  | 250 [8'-2"]  |
| 250 [8'-2"]           | 270 [8'-10"] | 260 [8'-6"]  |
| 260 [8'-6"]           | 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 [25'-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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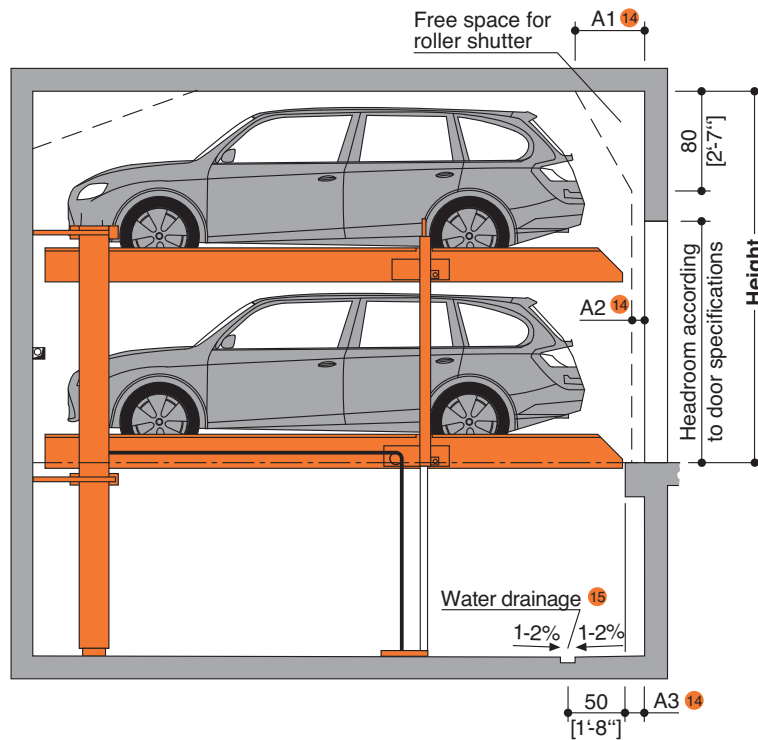
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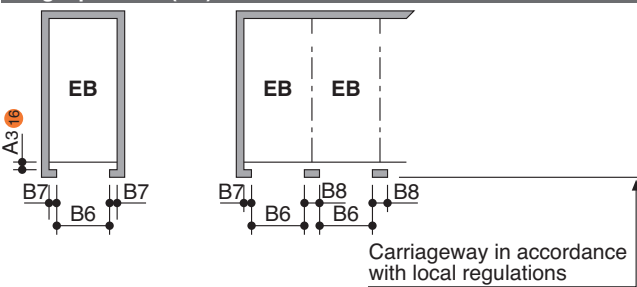
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**Garage with door**



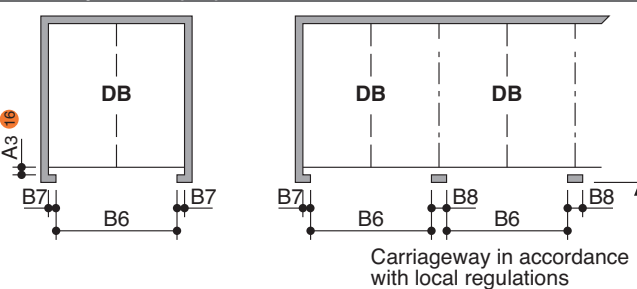
**Width dimensions for garage with door**

**Single platform (EB)**



| Usable platform width | Door entrance width B6 | B7      | B8       |
|-----------------------|------------------------|---------|----------|
| 230 [7'-7"]           | 230 [7'-7"]            | 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).

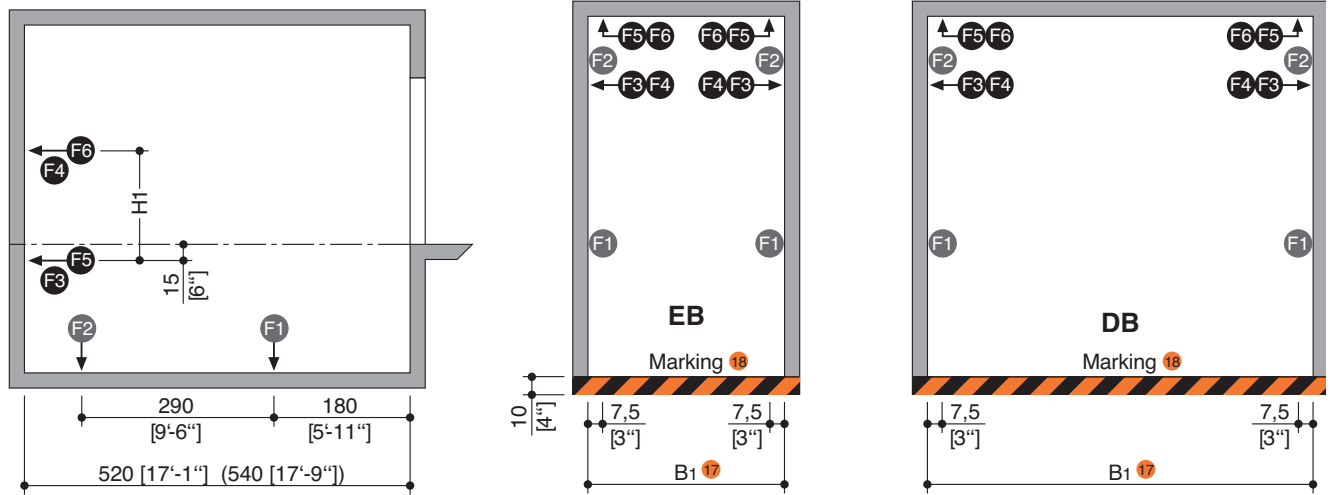
For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

- 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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## Load plan



### Platform load in kg

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

| 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" ]  |

### Platform load in lbs

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

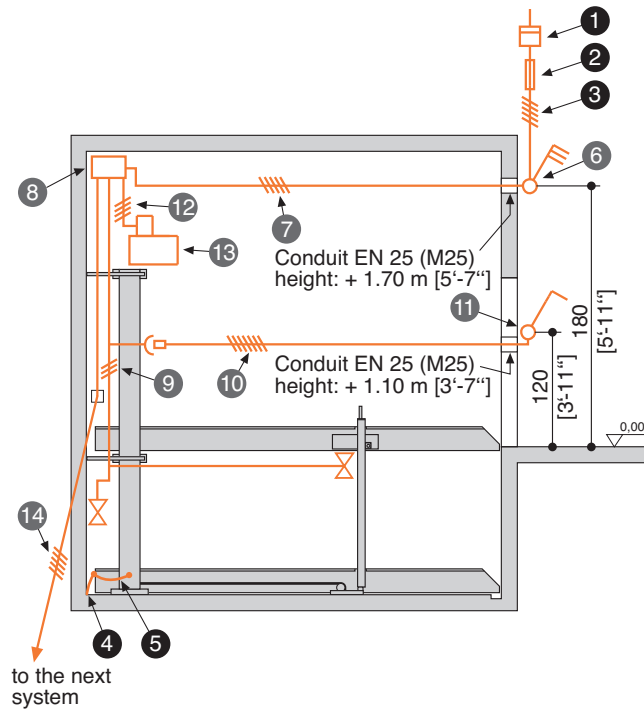
- ! Units are dowelled to the floor. Drilling depth: approx. 15 cm [6"].
- Floor and walls below the drive-in level are to be made of concrete (quality minimum C20/25)!
- The dimensions for the points of support are rounded values. If the exact position is required, please contact KLAUS Multiparking.

- 17 Dimension B1 see page 3
- 18 Marking compliant to ISO 3864 (colors used in this illustration are not ISO 3864 compliant)
- 19 All forces in kN
- 20 All forces in lbf



## 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:<br>3 x fuse 16 A (slow) or circuit breaker 3 x 16 A (trigger characteristic K or C)<br>3 x fuse 20 A (slow) or circuit breaker 3 x 20 A (trigger characteristic K or C)<br>2 x fuse 32 A (slow) or circuit breaker 2 x 32 A (trigger characteristic K or C)<br>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<br>1 per 5,2 kW unit<br>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<br><br>Supply line 5 x AWG 10 (2 PH + PE) with marked wire and protective conductor<br><br>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<br>1 per 3,7 kW unit<br>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)<br>Supply line 5 x AWG 10 (2 PH + PE) with marked wire and protective conductor (for 3,7 kW unit)<br>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><br>Hydraulic unit 3,7 kW, two-phase current, 240 V / 60 Hz<br>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° C [+14 to +104° F].

Relative humidity 50% at a maximum outside temperature of +40° C [+104° F].

If lifting or lowering times are specified, they refer to an environmental temperature of +10° C [+50° 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 business 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.

ZERTIFIKAT ◆ CERTIFICATE ◆ CERTIFICADO ◆ CERTIFIKAT ◆ 記証証書 ◆ CERTIFICATE ◆ ZERTIFIKAT



### Certificate concerning the examination of conformity

|                                           |                                                                                                                                                                                                |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Certificate no:</b>                    | KP 454                                                                                                                                                                                         |
| <b>Certification body:</b>                | TÜV SÜD Industrie Service GmbH<br>Zertifizierungsstelle für Produkte der Fördertechnik<br>Gottlieb-Daimler-Str. 7<br>70794 Filderstadt - Germany                                               |
| <b>Applicant / Certification holder:</b>  | KLAUS Multiparking GmbH<br>Hermann-Krum-Str. 2<br>88319 Altrach - Germany                                                                                                                      |
| <b>Date of application:</b>               | 2015-08-12                                                                                                                                                                                     |
| <b>Manufacturer:</b>                      | KLAUS Multiparking GmbH<br>Hermann-Krum-Str. 2<br>88319 Altrach - Germany                                                                                                                      |
| <b>Product:</b>                           | Equipment for power driven parking of motor vehicles                                                                                                                                           |
| <b>Type:</b>                              | MultiBase 2072i / 2078i EB<br>2.000 kg, 2.600 kg, 3.000 kg<br>MultiBase 2072i / 2078i DB<br>2.000 kg, 2.600 kg                                                                                 |
| <b>Test laboratory:</b>                   | TÜV SÜD Industrie Service GmbH<br>Prüflaboratorium für Produkte der Fördertechnik<br>Prüfbereich Maschinen der Fördertechnik<br>Gottlieb-Daimler-Str. 7<br>70794 Filderstadt – Germany         |
| <b>Date and number of the test report</b> | 2016-08-09<br>KP 454                                                                                                                                                                           |
| <b>mark of conformity:</b>                | KP 454                                                                                                                                                                                         |
| <b>Test specifications:</b>               | - 2006 / 42 / EC, Annex I<br>- 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




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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

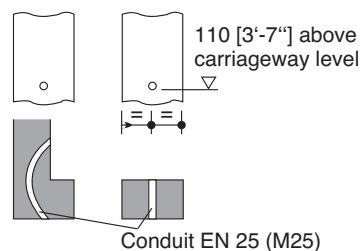
Suitable electrical supply to the main switch must be provided by the customer during installation. The functionality can be monitored on site by our fitters together with the electrician. If this cannot be done during installation for some reason for which the customer is responsible, the customer must 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"]).

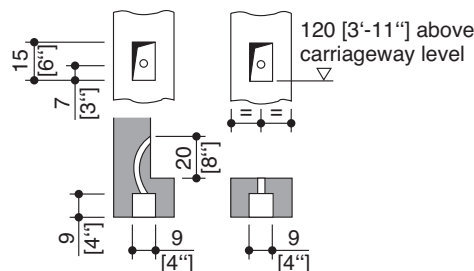
### Operating device

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:

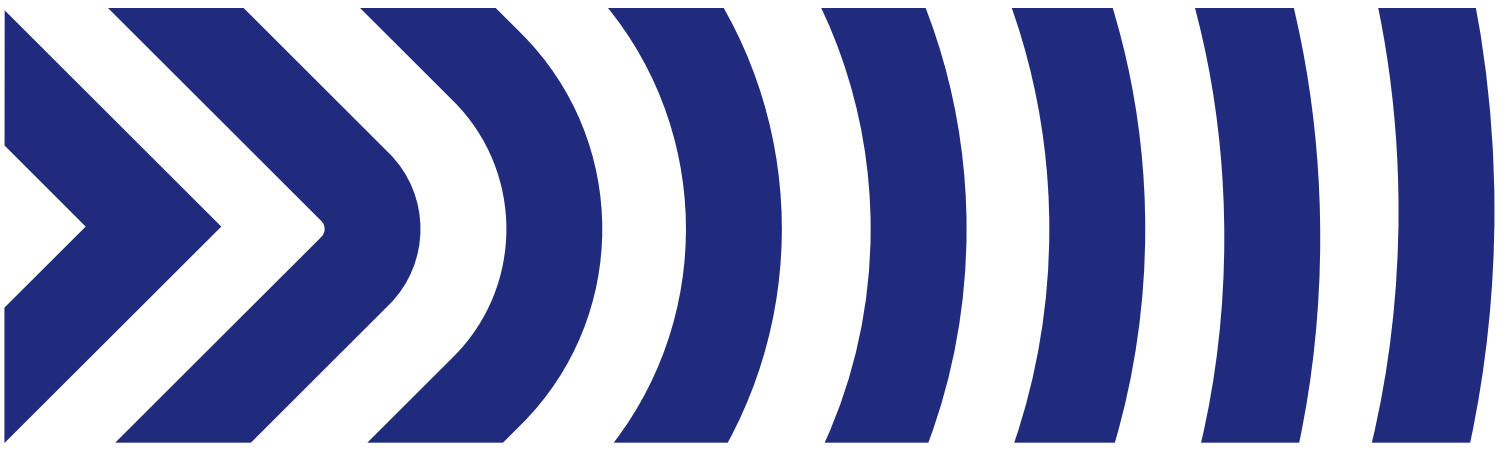
- Operating device (Emergency Stop, lock, 1 master key per parking space)
- Control unit with wiring harness and sensors

### 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.



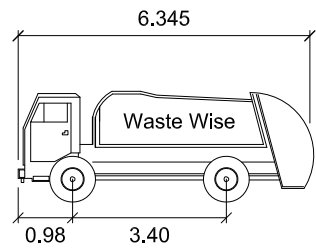
# Appendix D

## Swept Path Diagrams



**VEHICLE USED IN SIMULATION**

(VEHICLE SPEED - 5KM/H)



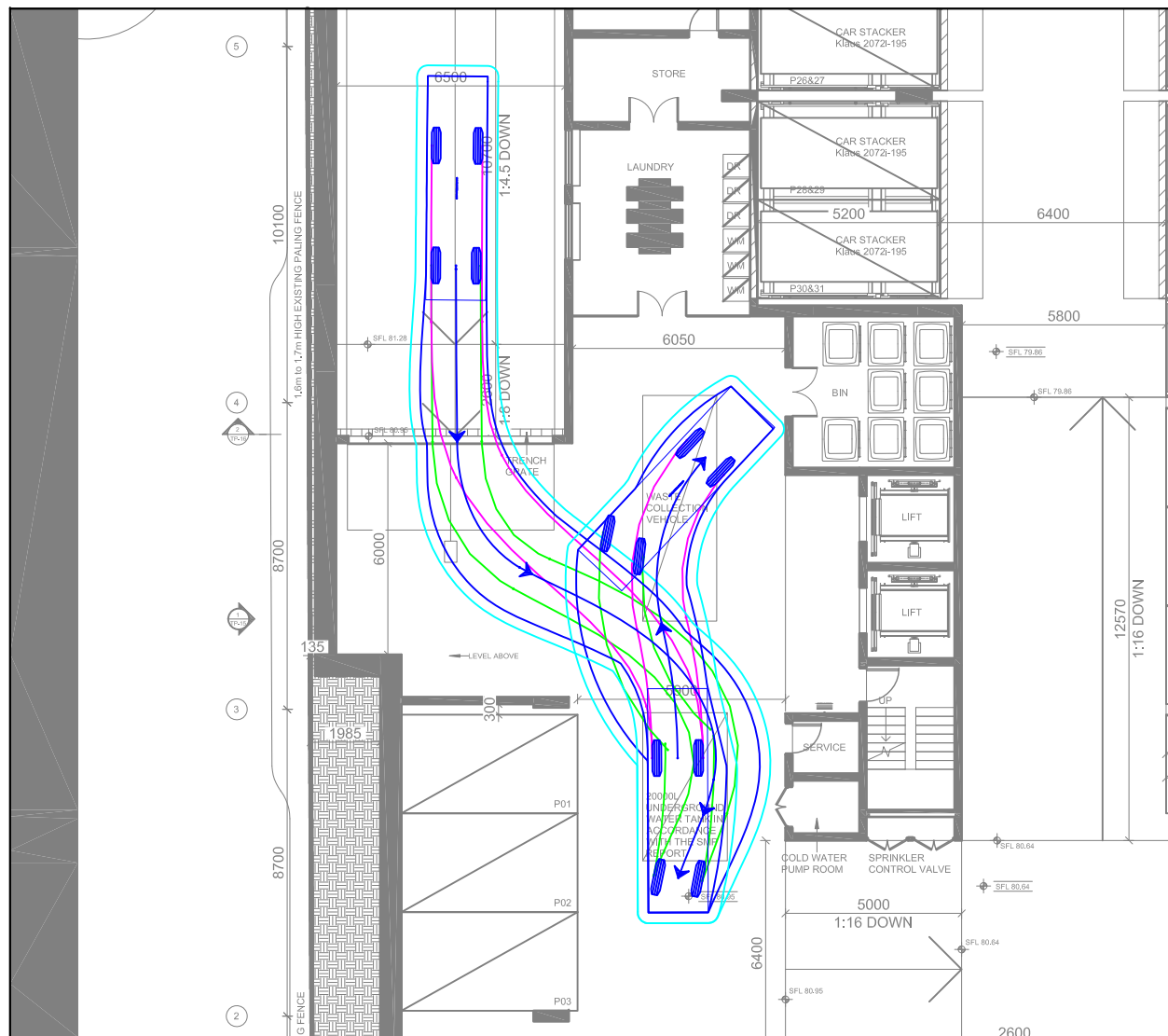
**Waste Wise Mini (Hino 300)**

- Width : 1.7m
- Front Track : 1.4m
- Rear Track : 1.44m
- Kerb to Kerb Radius : 12.4m

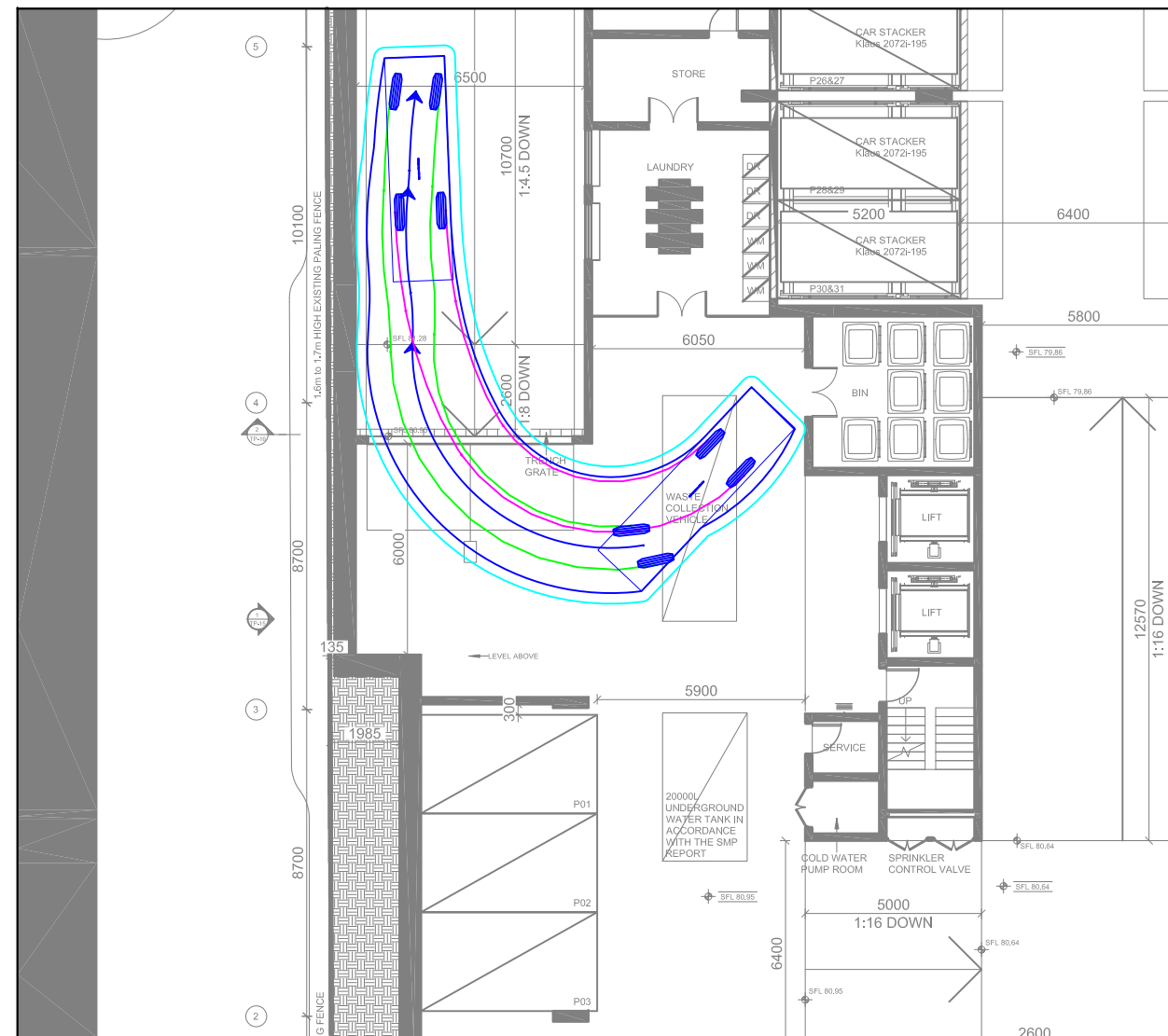
**LEGEND**

- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE

**6.4M WASTE TRUCK - ENTRY MOVEMENT**



**6.4M MINI WASTE TRUCK - EXIT MOVEMENT**



**PRELIMINARY ONLY  
NOT FOR CONSTRUCTION**

| REV. | REVISION NOTES | REVISION DATE |
|------|----------------|---------------|
|      |                |               |
|      |                |               |
|      |                |               |
|      |                |               |

GENERAL NOTES:  
 BASE INFORMATION FROM: 2200714\_1494-1496 North Road,  
 Clayton\_Town Planning\_RFI - Floor Plan - Ba....dwg  
 PREPARED BY Alta Architecture - Received 15-07-2020

|                             |             |
|-----------------------------|-------------|
| DESIGNED BY:<br>J. YOUNG    | 16 JUL 2020 |
| CHECKED BY:<br>L. FURNESS   | 16 JUL 2020 |
| FILE NAME:<br>G27799-02.dwg | ISSUE:<br>A |



Level 28, 459 Collins Street  
 MELBOURNE VICTORIA 3000  
 TEL : (03) 9822-2888

**1494-1496 NORTH ROAD, CLAYTON**  
**6.4M MINI WASTE TRUCK SWEEP PATHS**  
**PROPOSED STUDENT ACCOMODATION DEVELOPMENT**

|                      |  |                  |                       |
|----------------------|--|------------------|-----------------------|
| SCALE:<br>1:200 (A3) |  | SHEET NO.: 01/02 | DRAWING NO.: 27799-02 |
|----------------------|--|------------------|-----------------------|

STACKER SPACE 14 & 15 - INGRESS

STACKER SPACE 14 & 15 - EGRESS

**VEHICLE USED IN SIMULATION**  
(VEHICLE SPEED - 5KM/H)

4.91\*

0.92 2.80

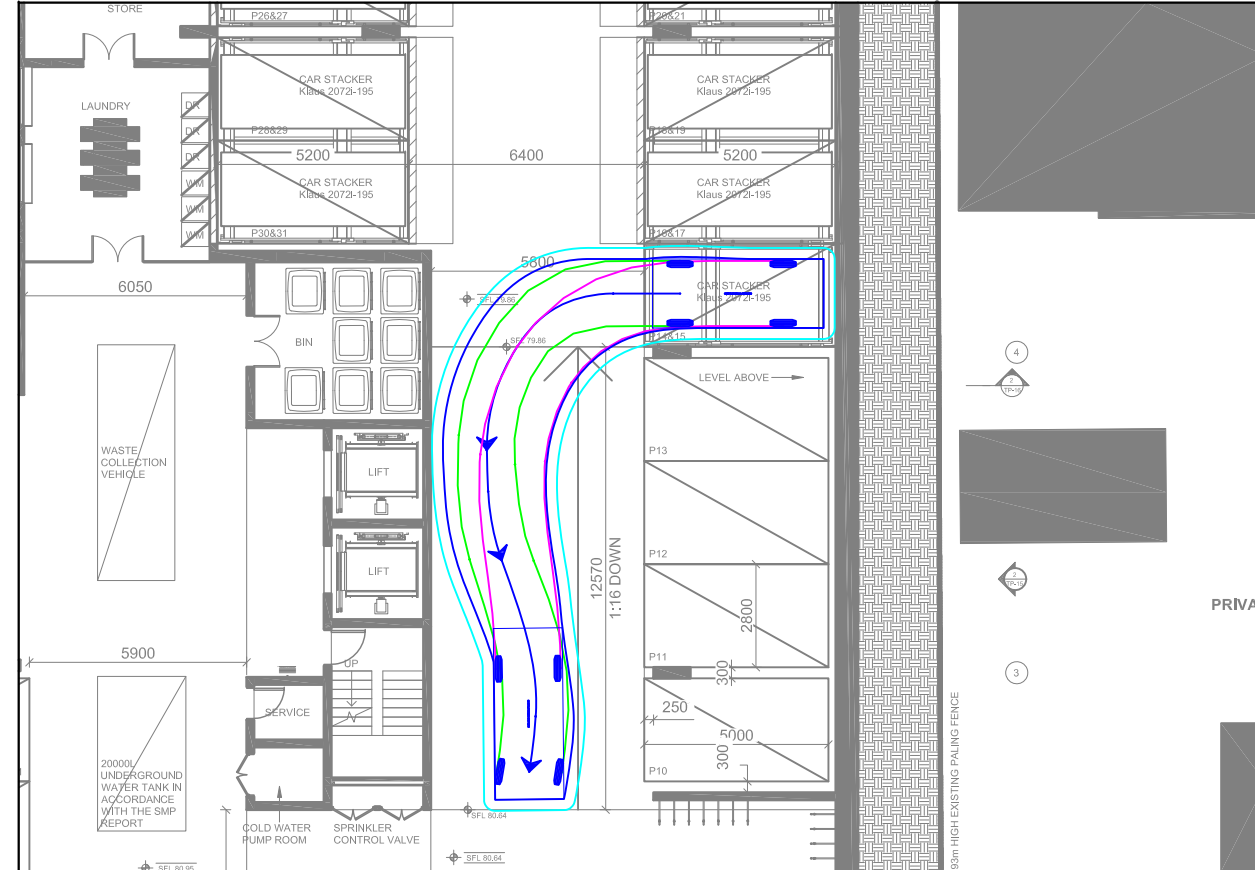
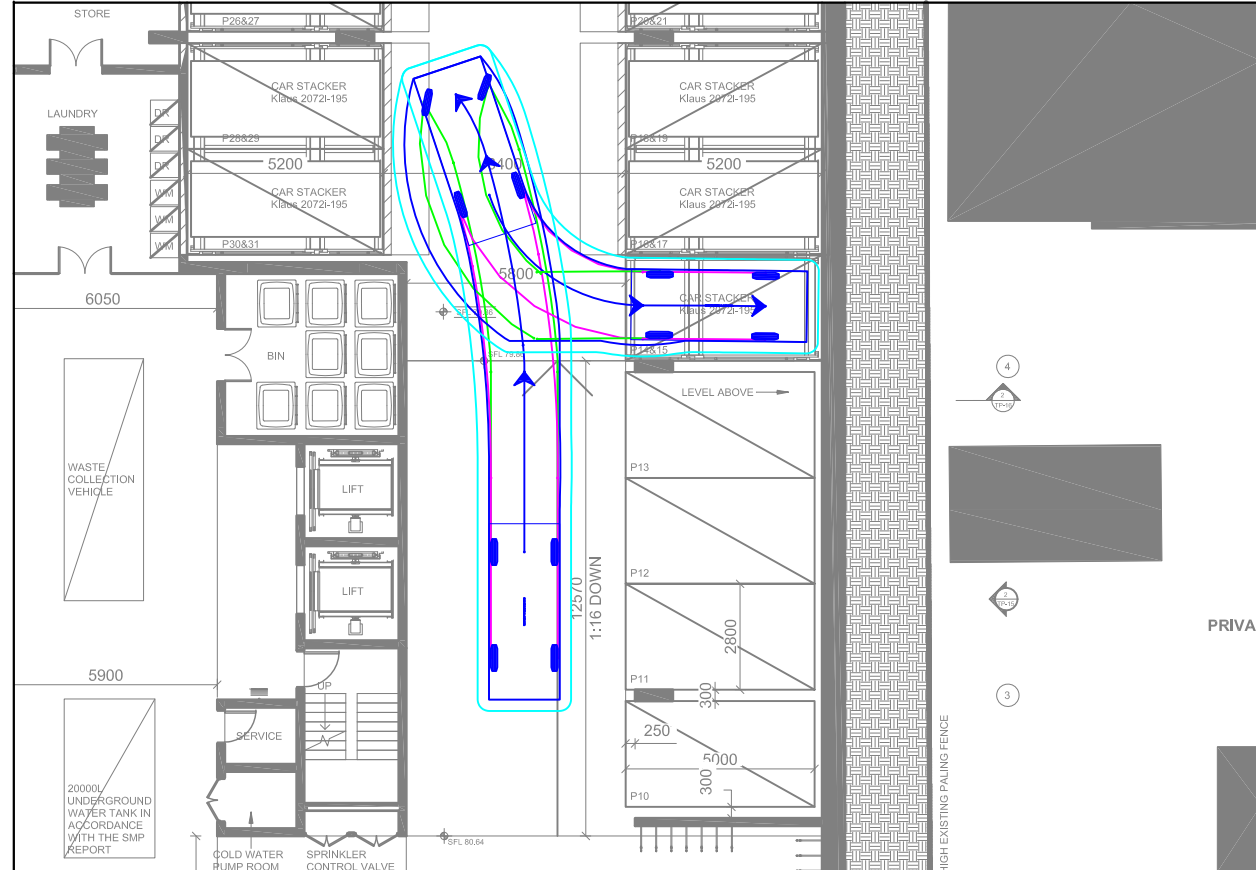
85th percentile  
(AS/NZS 2890.1:2004)

Width : 1.87m  
Track : 1.77m  
Kerb to Kerb Radius : 11.5m

\* actual template based on relevant longitudinal dimensions that affect swept path\* as set out in Section B2.1 of AS/NZS 2890.1:2004

**LEGEND**

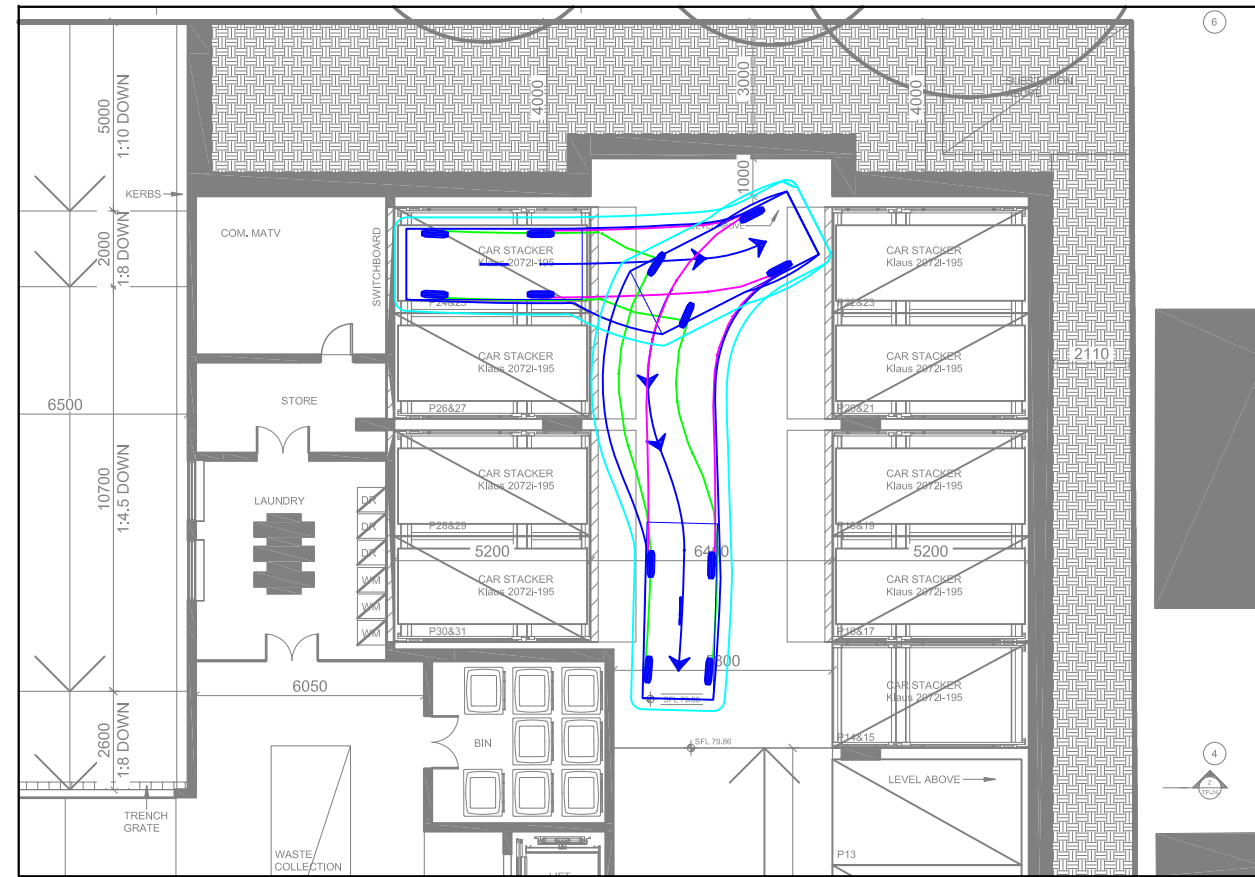
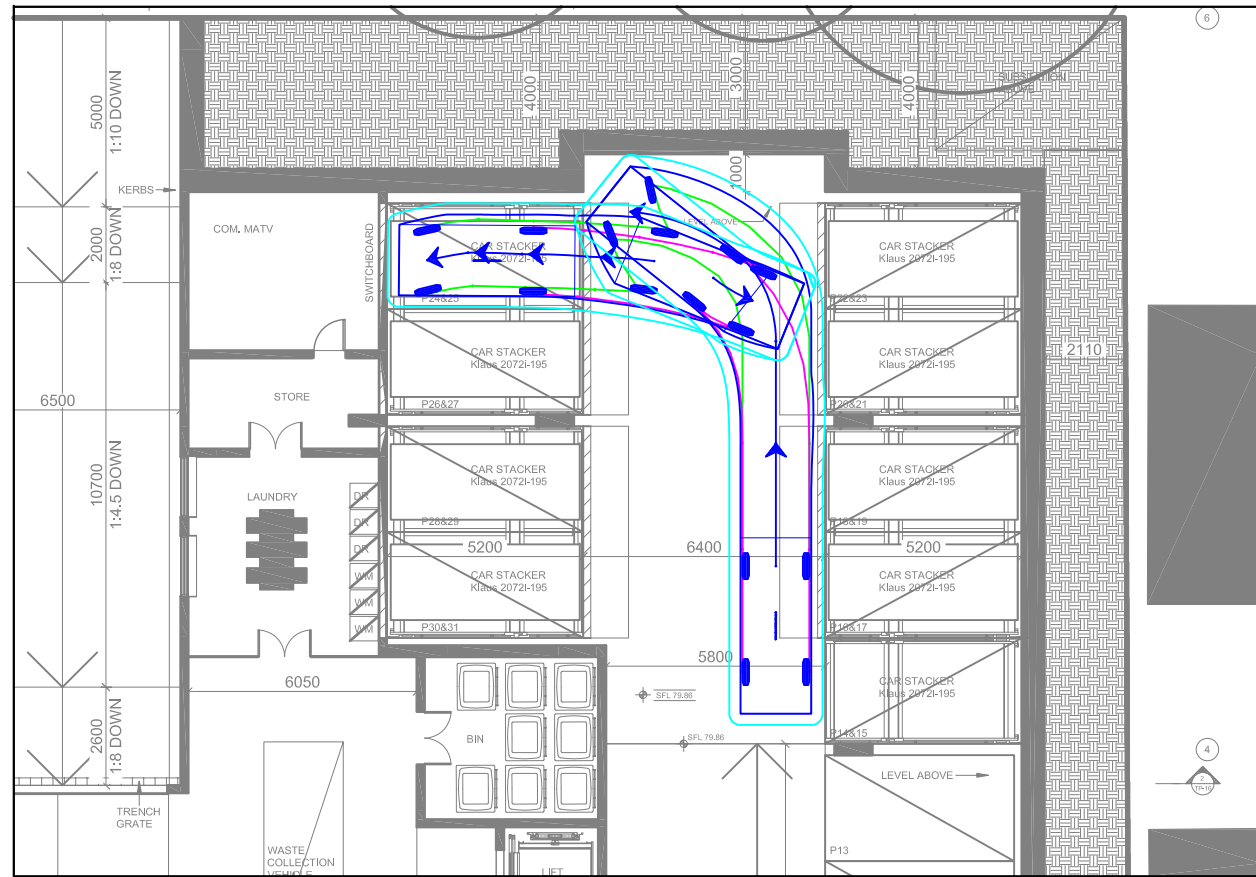
- REAR WHEELS
- FRONT WHEELS
- VEHICLE BODY
- BODY CLEARANCE



STACKER SPACE 24 & 25 - INGRESS

STACKER SPACE 24 & 25 - EGRESS

**PRELIMINARY ONLY**  
**NOT FOR CONSTRUCTION**



| REV. | REVISION NOTES | REVISION DATE |
|------|----------------|---------------|
|      |                |               |
|      |                |               |
|      |                |               |
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GENERAL NOTES:  
BASE INFORMATION FROM: 2200714\_1494-1496 North Road,  
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DESIGNED BY:  
J. YOUNG 16 JUL 2020

CHECKED BY:  
L. FURNESS 16 JUL 2020

FILE NAME:  
G27799-02

ISSUE:  
A

Level 28, 459 Collins Street  
MELBOURNE VICTORIA 3000  
TEL : (03) 9822-2888

**1494-1496 NORTH ROAD, CLAYTON**  
**B85 DESIGN CAR SWEEP PATHS**  
**PROPOSED STUDENT ACCOMMODATION DEVELOPMENT**

SCALE: 1:200 (A3)

SHEET NO.: 02/02

DRAWING NO.: G27799-02