fernway
engineering

ABN 38 475 511 899

18 December 2023

WY Constructions Pty Ltd
Mr William Wang
23 Christina Road
Villawood NSW 2163

RE: Car Parking Design Certification, 27 Fletcher St, Campsie NSW

Fernway Engineering has been engaged by the Applicant to assess and certify the transport access and parking arrangements for the multi-dwelling development at the above address. This is to accompany the S4.55 modification application to Canterbury-Bankstown Council.

This assessment pertains to the set of architectural plans prepared by SWA Architects, overlayed in **Attachment A**, and the following regulatory design instruments:

- AS2890, Part 1, 3 and 6.

This review and certification process has been undertaken by an industry-recognised traffic engineering professional, the undersigned.

Parking Compliance

The access, parking and servicing arrangements of the development have been assessed against the relevant design requirements of AS2890 parts 1, 3 and 6, and relevant state/local regulatory requirements where specified.

A summary of design elements has been provided in Table 1 below.

Table 1: Car Park Design Summary

Design Element	Requirement	Performance Solution	Compliant	Note
ACCESS				
Access Category	1			
Access Width	3-5.5m (combined) + 300mm clearance to objects over 150mm in height.		✓	
Located outside restricted intersection clearances	Figure 3.1, AS2890.1		✓	
Driveway Visibility	**SISD** (AS2890.1): 45m@50kph		✓	**Note 1**
Pedestrian Sight Splays	Figure 3.3, AS2890.1		✓	**Note 2**
Driveway Grades	**Max:** 5% within 6m of the property boundary		✓	
CIRCULATION				
Circulation road width	**ONE-WAY:** 3m with 300mm clearance to obstructions. **TWO-WAY:** 5.5m with 300mm clearance to obstructions	✓		
Maximum Grade	25%		✓	
Gradient Transitions	**Max:** 12.5% for summit, 15% for sag.		✓	
Forwards In/Forwards Out	Vehicles are to enter and exit the site in a forwards direction.		✓	
Height Clearances	2.2m 2.5m (above accessible bays)		✓	
Passing	Every 30m		✓	**Note 3**
PARKING BAYS				
Parking Class	1			
Standard Bay Dimensions	2.4m x 5.4m		✓	
Door Clearances	300mm		✓	
Aisle Width	5.8m		✓	
Blind Aisle	1m extension		✓	
Disabled Parking	2.4mx5.4m with an adjacent shared bay. The shared bay is to be of equivalent dimensions,		✓	

	linemarked and bollarded as per AS2890.6.			
Headroom (min)	2.2m (standard space), 2.5m (Disabled space)	✓		**Note 4**
BICYCLES				
Racks	1.8m (L) x 0.5m (W) x 1.8m (H), with 1.5m aisle width.		✓	
NOTES				
Note 1	The driveway is located near the top of a crest, with straight horizontal geometry. Visibility is maintained beyond minimum Australian Standards. As is commonplace in most urban settings, on-street parking has the potential to create temporary visual obstructions. As Road Manager, Council manages on-street parking according to their local practices.			
Note 2	The pedestrian sight splay encroaches into the neighbouring property. Currently, the common boundary is defined by a low-clearance brick wall that meets AS2890.1 sight splay requirements. This was approved under the original Consent.			
Note 3	Refer to Section **"Traffic Signal System'** on Page 2.			
Note 4	Space R07 has a reduced headroom clearance of 2.11m. Whilst this falls short of As 2890.1, it will nonetheless accommodate the majority of passenger vehicles. For comparisons with contemporary parking design standards, the Victorian Planning Provisions (52.06) apply a minimum headroom of 2.1m across the entire state. Noting that all other parking bays meet the 2.2m requirement, this minor reduction is considered acceptable, on the grounds that prospective owners are made aware of the minor deviation.			
Note 4	This table is not intended to represent a summary of key design elements and is not an exhaustive list of all design elements assessed in accordance with AS2890.			

Traffic Signal System

A passing bay is located at the entrance to the car park. A basic signal system is proposed to facilitate passing movements, and will have the following characteristics:

1. Default priority movement shall be given towards entering traffic.
2. One signal shall be located at the driveway entrance, clearly visible from the waiting bay. It shall not be audible, nor shall it resemble a public traffic signal device to avoid amenity impacts or driver confusion.
3. A series of basement signals shall be designed such that they are visible from all parking bays.

Detailed specifications shall be provided by the equipment supplier prior to Construction Certification, but shall meet the above minimum criteria.

Swept Path Assessment

The swept path analysis was undertaken using the AutoTURN program, in accordance with the methods of Appendix B of AS2890.1:2004. The analysis concluded that:

- A B99 may enter the site, hold in the waiting bay whilst a B85 exits, and subsequently proceed into the car park.
- The design vehicle (B85) can enter and exit each parking space in a standard 3-point, or 5-point manoeuvre. In a residential context, with familiar users and low turnover, manoeuvring up to 5-point turns is acceptable.
- A 300mm clearance is maintained for all objects.
- A vehicle may enter and exit the site in a forward direction.

Attachment A shows the results of the swept path tests obtained. The **Black** colour of the swept paths indicates the vehicle body envelope, while the **blue** lines indicate the wheel path and the **Red** lines indicate the 300mm clearance envelope of vehicles).

Conclusion

Fernway Engineering has undertaken an assessment of the parking and access arrangements for the residential development at 27 Fletcher Street, Campsie NSW.

Fernway Engineering confirms that the proposed vehicular parking and access arrangements generally comply with the design requirements of AS2890.1:2004. Where any deviations were identified, these were professionally assessed and deemed fit for use on the grounds described within this report.

Yours sincerely,

Christopher J. Saunders

Principal Transport Engineer

Fernway Engineering Pty Ltd

BE (Civil), RPEQ (#24648), MIEAust, M.AITPM

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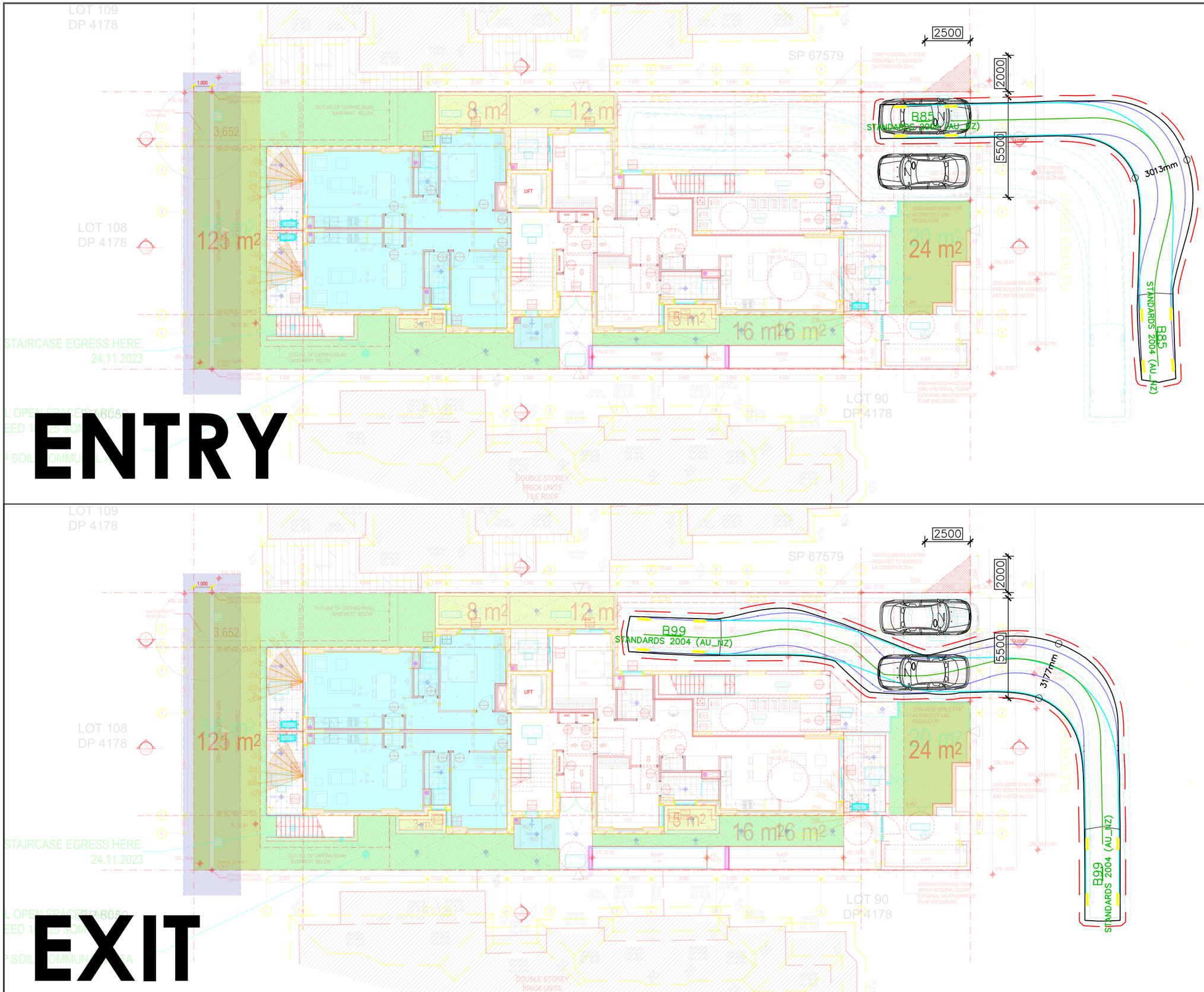
APPENDIX A

Swept Path & Ground Clearance Analysis



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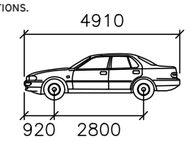

B85

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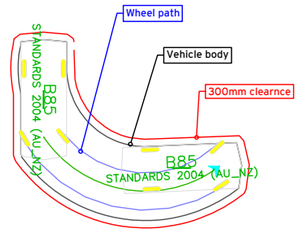
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

FORWARDS



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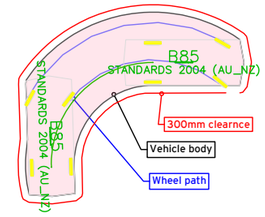

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CLIENT:
SWA Architects

SITE:
27 Fletcher St, Campsie

TITLE:
BASEMENT

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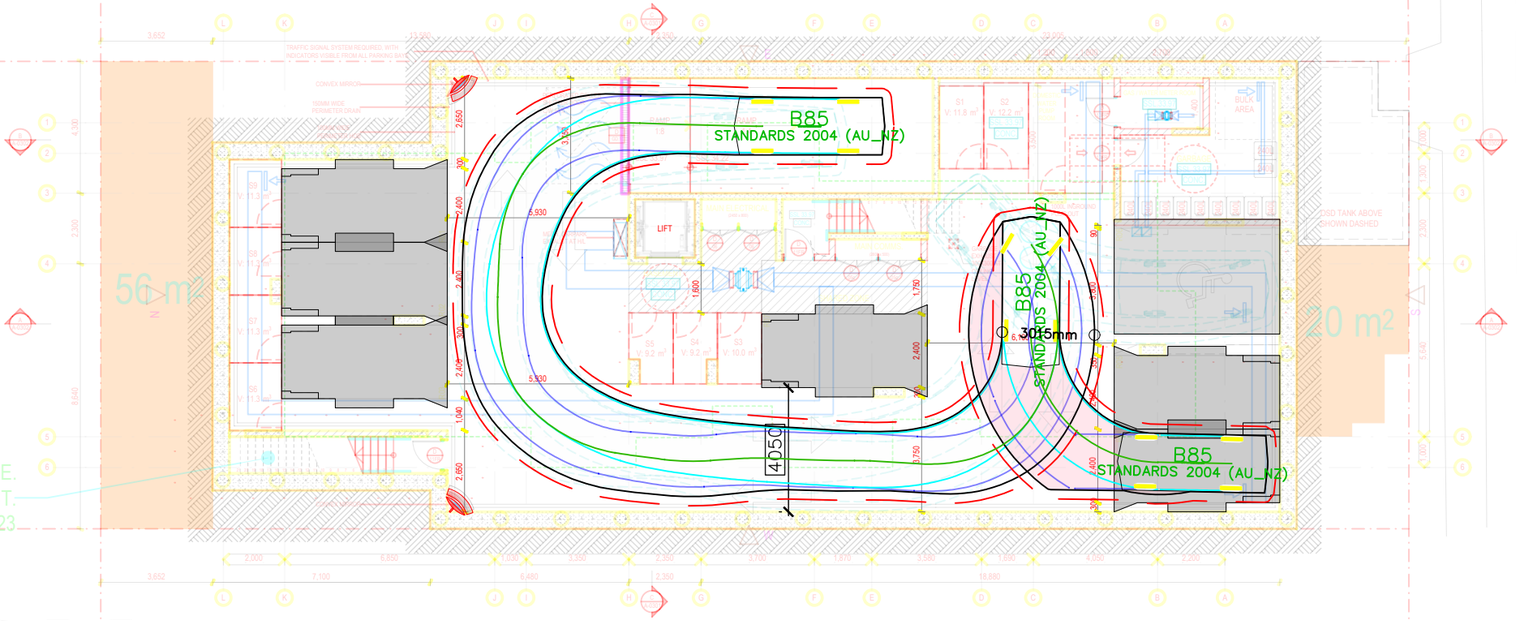

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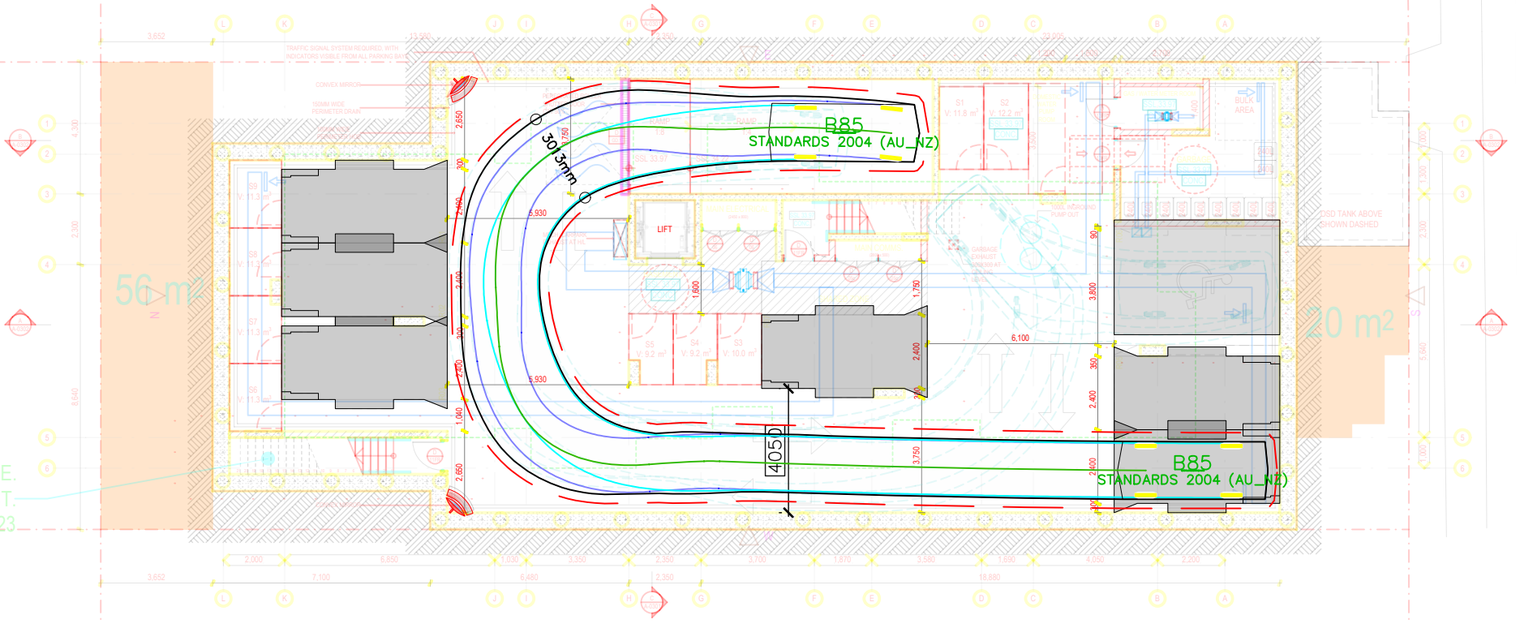

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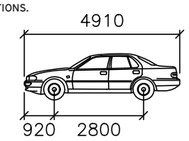

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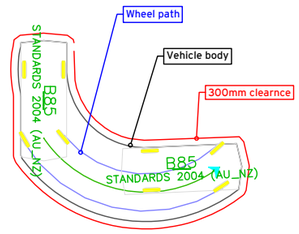

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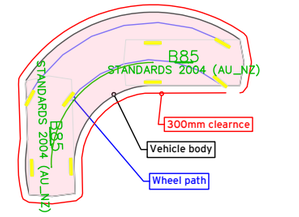

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Swept Path Analysis

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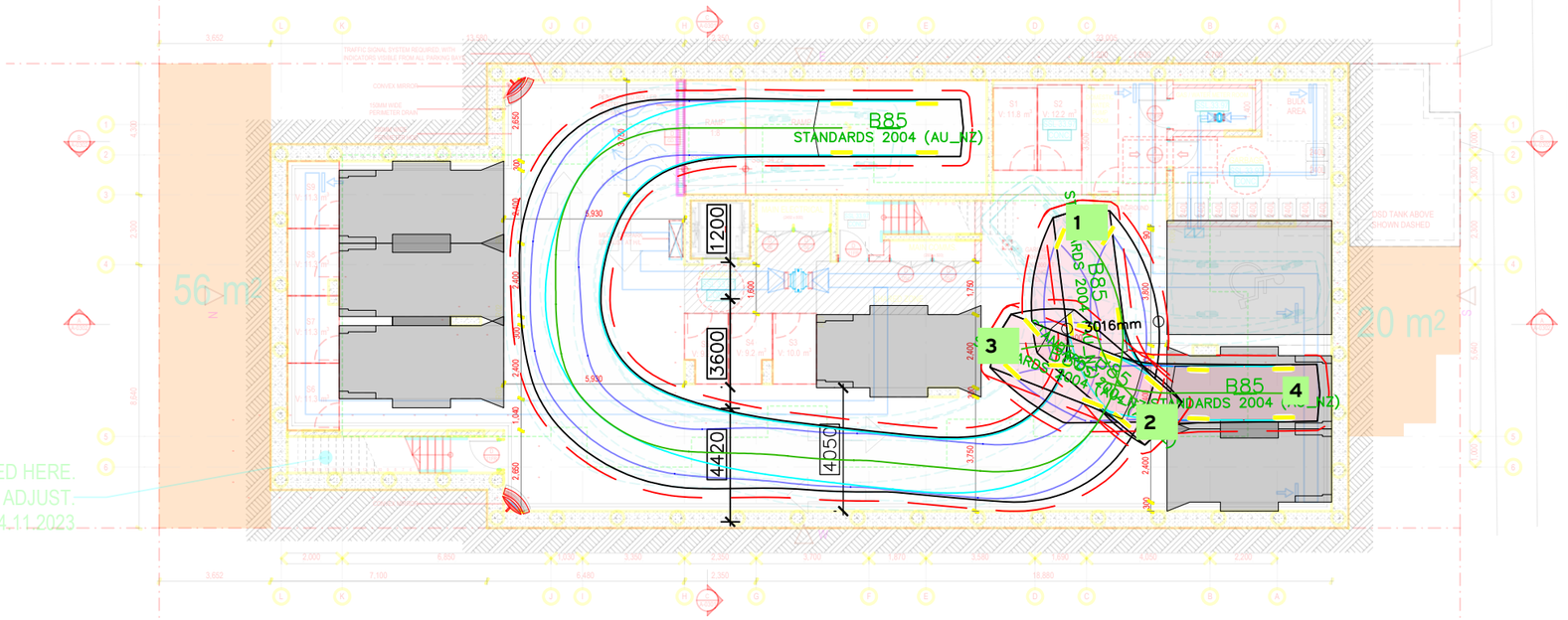

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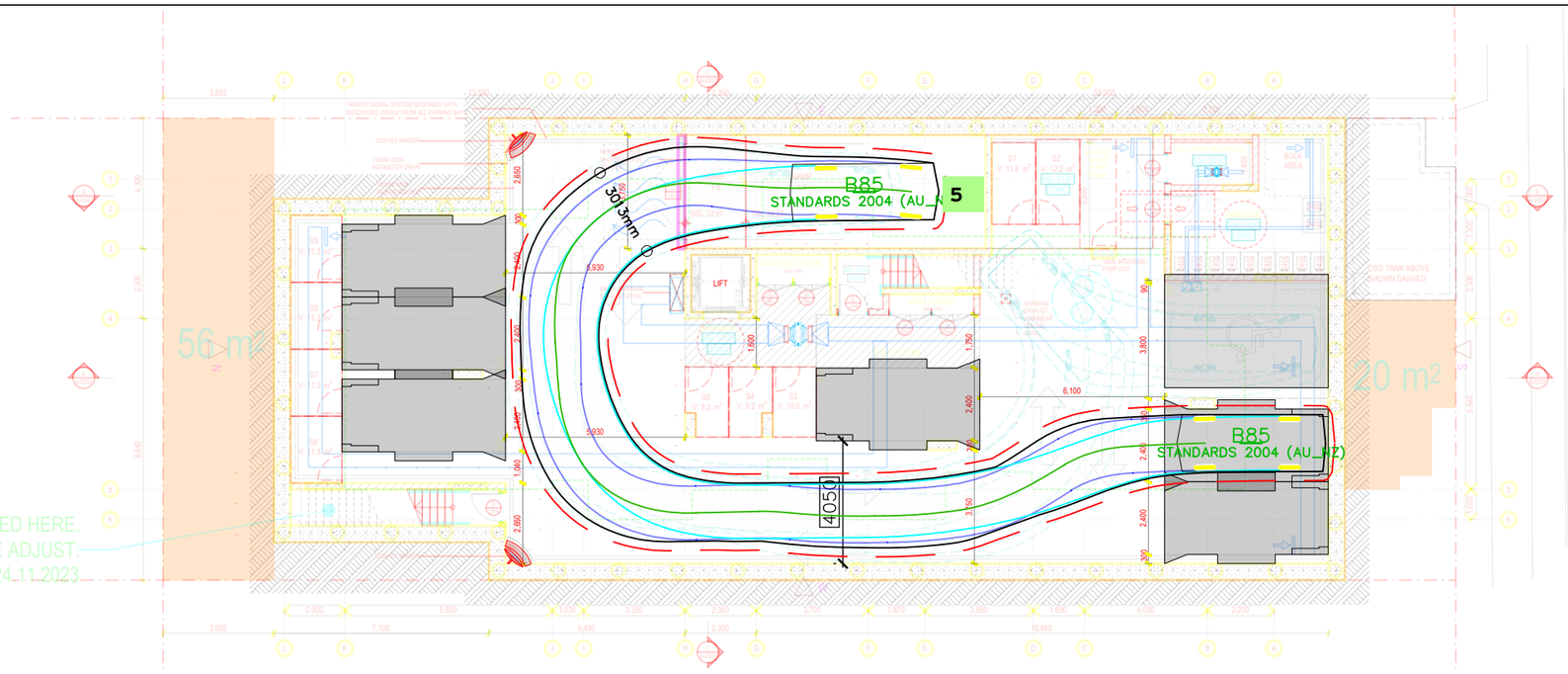

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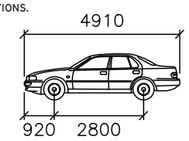

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Steering Angle	: 34.1

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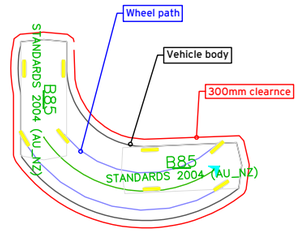

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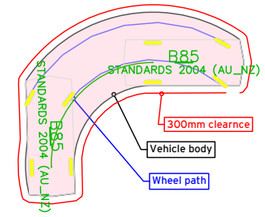

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Swept Path Analysis

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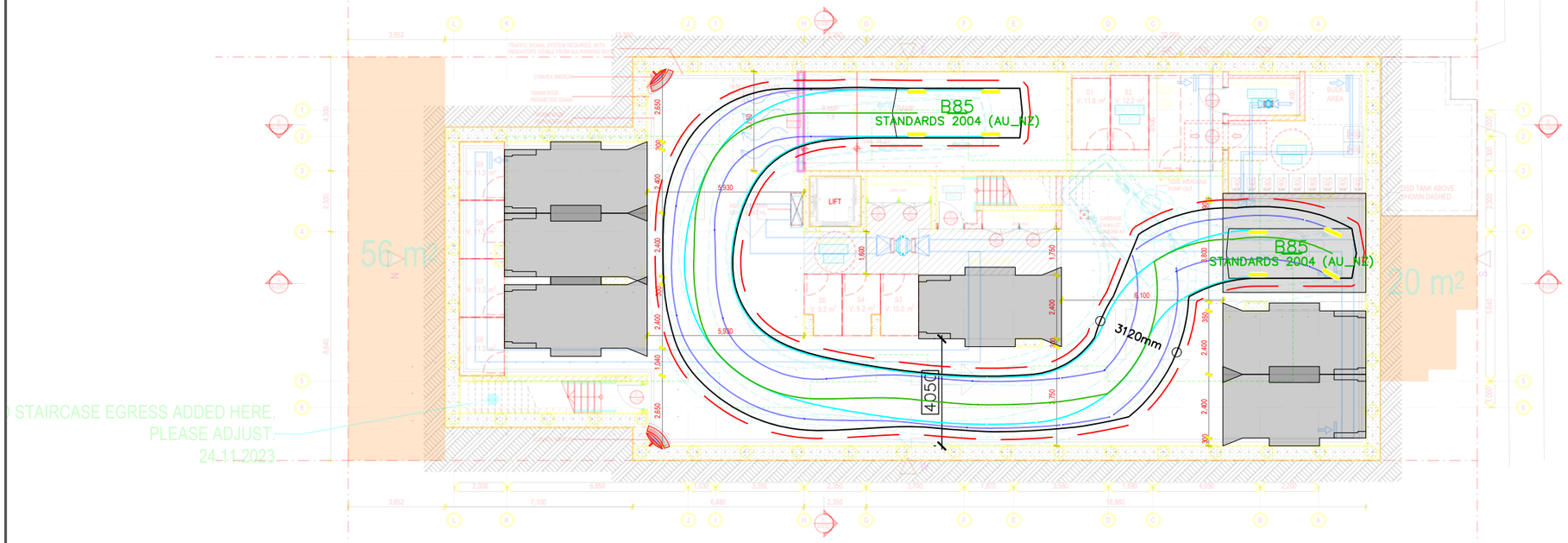

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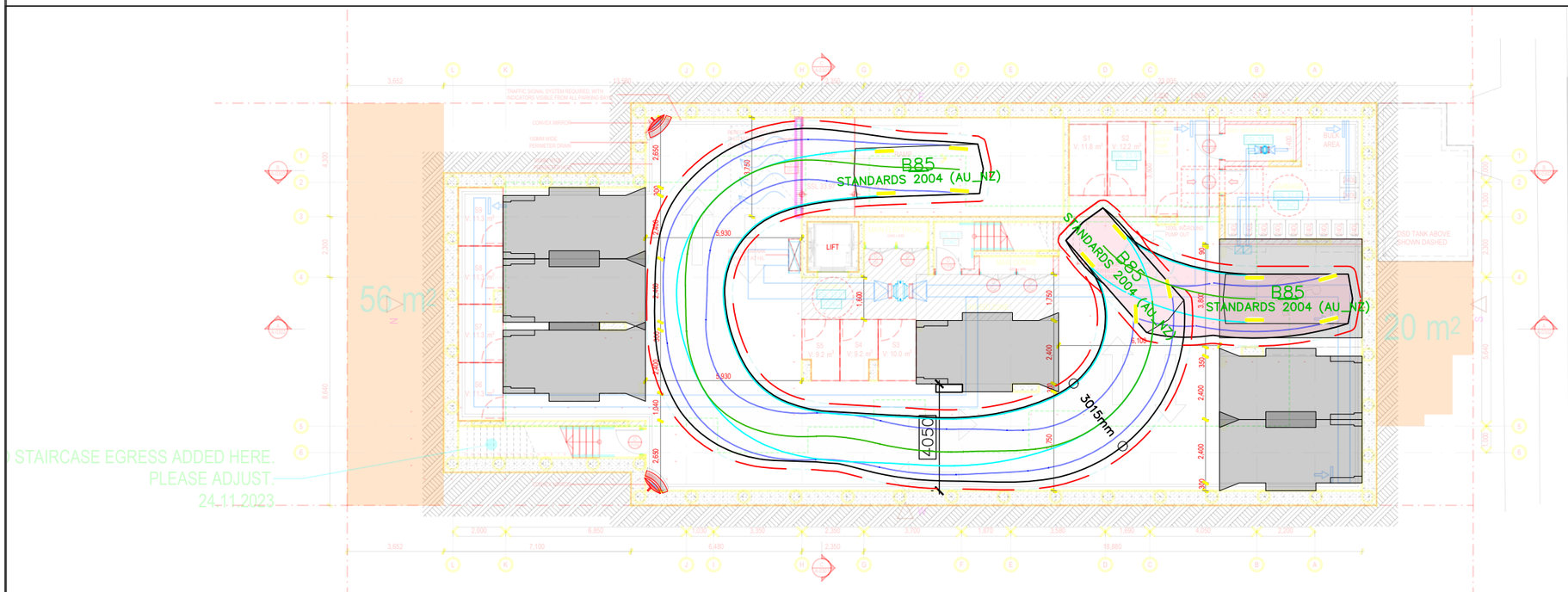

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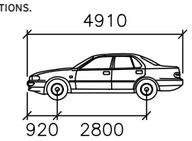

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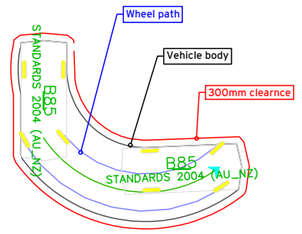

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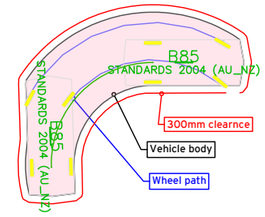

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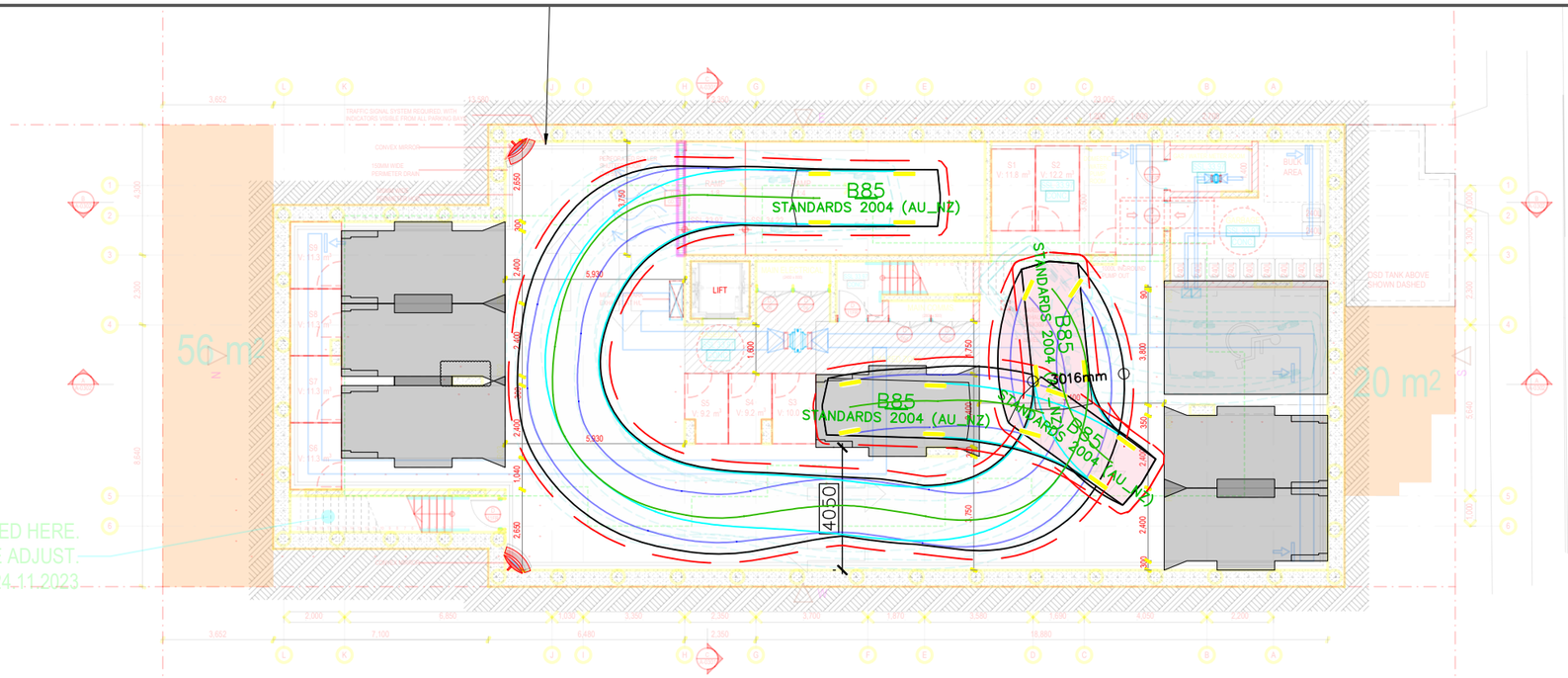

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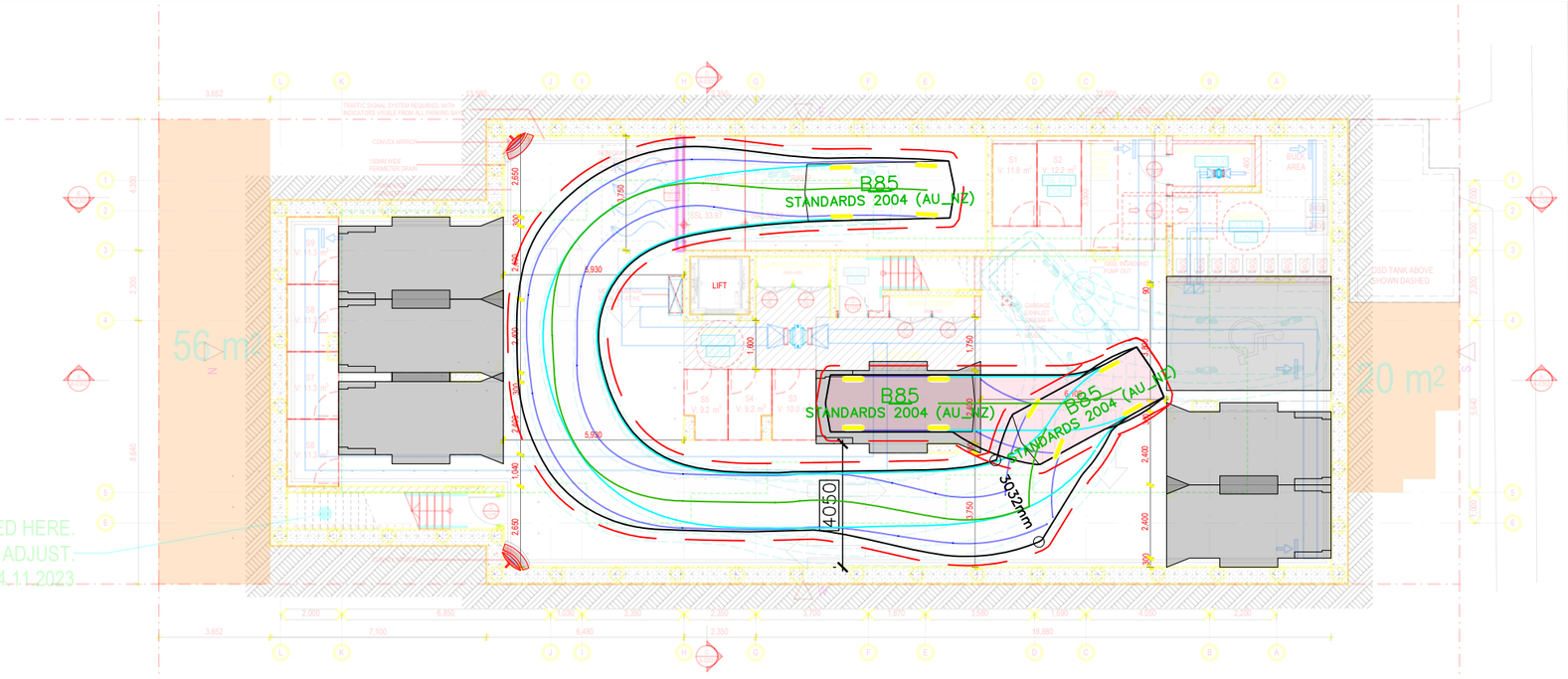

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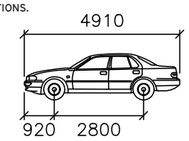

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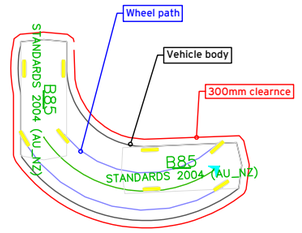

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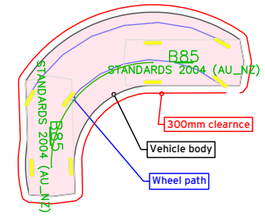

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TITLE:
Swept Path Analysis

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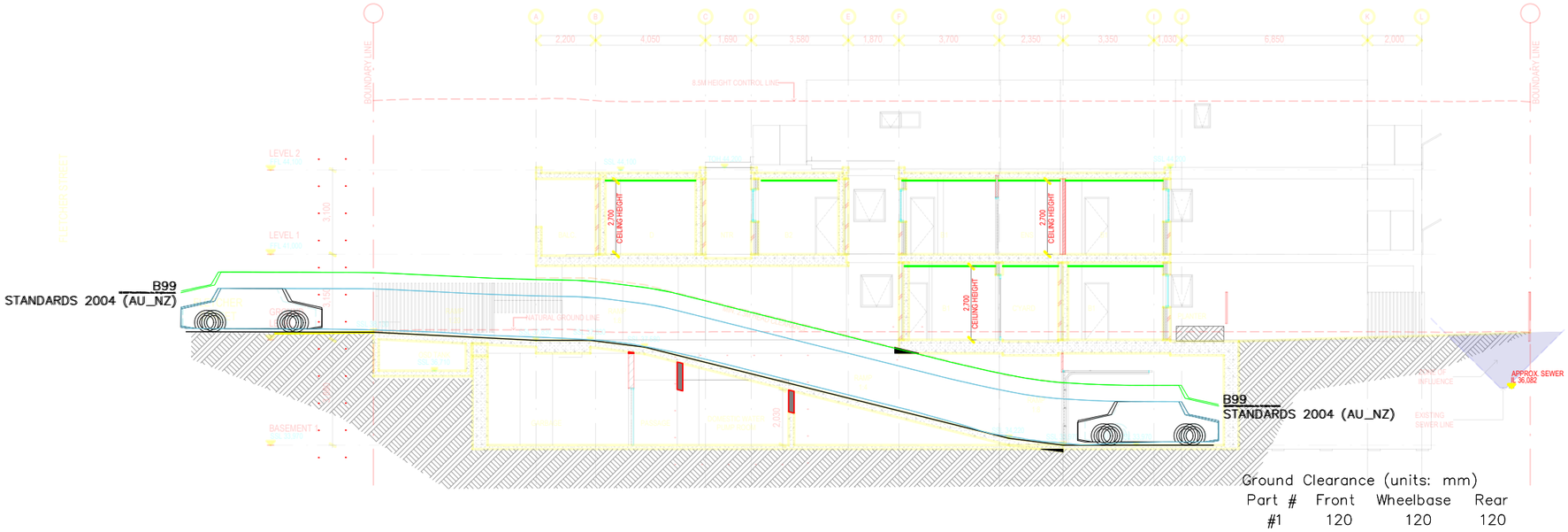

Ground Clearance (units: mm)

Part #	Front	Wheelbase	Rear
#1	120	120	120

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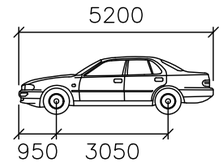

B99

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Steering Angle	: 33.9
Speed	: 5kph

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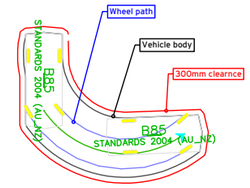

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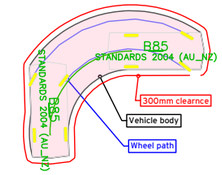

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fernway engineering

CLIENT:
SWA Architects

SITE:
27 Fletcher St, Campsie

TITLE:
Ground Clearance Review (B99)

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