

HYDROX NOMINEES PTY LTD

TRANSPORT ASPECTS OF  
PLANNING PROPOSAL FOR  
PROPOSED MASTERS STORE,  
SOUTH TAMWORTH

APRIL 2013

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REF: 8441

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## I. INTRODUCTION

- I.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Hydrox Nominees Pty Ltd to undertake the transport aspects of a planning proposal to permit a new Masters store on Scott Road and Locks Lane at South Tamworth. The site location is shown in Figure 1.
- I.2 It is currently vacant land. The planning proposal would provide for a Masters store of some 13,519m<sup>2</sup>, plus separate tenancies of 1,690m<sup>2</sup>, with vehicular access from Scott Road and Locks Lane.
- I.3 The transport implications of the planning proposal are set down in the following chapter.

## 2. TRANSPORT ASPECTS OF PLANNING PROPOSAL

2.1 The transport aspects of the planning proposal are set down through the following sections:

- site location and road network;
- scale of development;
- access, servicing and internal layout;
- parking provision;
- traffic generation and road works;
- consultation with authorities; and
- summary.

### Site Location and Road Network

2.2 The site is located on the northern side of the New England Highway (Scott Road), east of Hilton Street, at South Tamworth. It is currently vacant land. The site has frontage to Scott Road and Locks Lane. The site location is shown in Figure 1.

2.3 There are commercial properties west of the site along Goonoo Goonoo Road and Lydia Street and residential properties in Scott Road. There is rural land to the east.

2.4 Scott Road forms part of the New England Highway which connects to the Tamworth town centre to the north-east. In the vicinity of the site, Scott Road provides for one traffic lane and one parking lane in each direction, clear of

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intersections, with a 60 kilometre per hour speed limit. East of Locks Lane it provides for one traffic lane in each direction and an 80 kilometre per hour speed limit. There is a cycle path on the northern side of the road and extended no stopping restrictions for westbound traffic approaching Goonoo Goonoo Road.

- 2.5 West of the site, Goonoo Goonoo Road is a major road with two traffic lanes and one parking lane in each direction, with a central concrete median. It forms part of the New England Highway south of Scott Road. It provides access to commercial and residential development and has a 60 kilometre per hour speed limit. The intersection of Goonoo Goonoo Road with Scott Road is controlled by a two lane roundabout. Vera Street forms a fourth (western) approach to the intersection.
- 2.6 Hilton Street runs north from Scott Road at a priority controlled t-intersection, west of the site. Hilton Street provides access to residential development and provides for one traffic lane and one parking lane in each direction, with a 50 kilometre per hour speed limit.
- 2.7 Locks Lane is east of the site and runs north from Scott Road at a priority controlled t-intersection. Locks Lane is an unsealed, two-way road which provides access to rural land. It has a 60 kilometre per hour speed limit and connects to Ebsworth Street to the north.
- 2.8 Karwin Street connects to Scott Road opposite the site. It provides access to residential properties and has an unsignalised t-intersection with Scott Road.
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### Scale of Development

- 2.9 The planning proposal would provide for a Masters of 13,519m<sup>2</sup> plus separate tenancies of 1,690m<sup>2</sup>. Vehicular access is proposed from Scott Road (left turn entry for customer vehicles) and Locks Lane (for customers and service vehicles, with all turns permitted). On site parking would be provided for some 416 cars.

### Access, Servicing and Internal Layout

- 2.10 Vehicular access to the site is shown from Scott Road (customer entry) and Locks Lane (entry/exit driveway for customers and service vehicles). The customer access point from Scott Road would be located opposite Karwin Street.
- 2.11 Swept paths of service vehicles are provided in Appendix A showing 19 metre semi trailers, 12.5 metre large rigid trucks and 8.8 metre medium rigid trucks entering the development, manoeuvring into the loading bays and exiting in a forward direction. Some minor modifications would be required to accommodate service vehicles manoeuvring on the site, as shown in these figures.
- 2.12 Within parking areas, parking space dimensions, aisle widths, ramp grades, transitions and height clearances should be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 2: Off-street commercial vehicle facilities), AS 2890.1:2004 and AS 2890.2 – 2002 at the time that a development application is made.
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### Parking Provision

- 2.13 Tamworth Development Control Plan 2010 No. 3 (Parking Requirement Schedule) does not include a specific parking rate for home improvement centres such as Masters. For bulky goods, Council's parking rate is one space per 45m<sup>2</sup>.
- 2.14 By comparison, RMS has undertaken surveys of parking demands of home improvement centres. One of the centres (South Nowra) is in a regional location, similar to the proposed South Tamworth Masters. Two of the centres (Bankstown and Minchinbury) have areas (14,111m<sup>2</sup> and 11,915m<sup>2</sup> respectively) similar in size to the proposed South Tamworth Masters.
- 2.15 The RMS parking demand surveys found a peak parking demand of 152 spaces at South Nowra for the 9,948m<sup>2</sup> store. This demand represents a rate of some 1.53 spaces per 100m<sup>2</sup> at peak times.
- 2.16 The RMS parking demand surveys found peak parking demands of 318 and 264 spaces at Bankstown and Minchinbury respectively. These demands represent rate of some 2.2 to 2.3 spaces per 100m<sup>2</sup> at peak times.
- 2.17 On this basis, the Masters store would require some 210 spaces (based on South Nowra) to some 310 spaces (based on Bankstown/Minchinbury). The tenancies would require some 38 spaces, based on Council's rate of one space per 45m<sup>2</sup> for bulky goods. The total parking requirement would therefore be some 250 to 350 spaces. This is satisfied by the proposed provision of 416 spaces.
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### Traffic Generation and Road Works

2.18 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with other traffic on the surrounding road work. In order to gauge traffic conditions, counts were undertaken at the intersections of:

- Scott Road/Goonoo Goonoo Road/Vera Street;
- Scott Road/Hilton Street;
- Scott Road/Karwin Street; and
- Scott Road/Locks Lane.

2.19 The results of the surveys are summarized in Table 2.1.

**Table 2.1: Existing two-way (sum of both directions) peak hour traffic flows**

Road	Location	Weekday PM	Saturday lunchtime
Goonoo Goonoo Road	North of Scott Road	965	1,085
	South of Scott Road	1,445	1,630
Vera Street	West of Scott Road	690	695
Hilton Street	North of Scott Road	30	30
Karwin Street	South of Scott Road	30	30
Locks Lane	North of Scott Road	0	25
Scott Road	West Hilton Street	1,250	1,295
	West of Karwin Street	1,270	1,315
	West of Locks Lane	1,335	1,315
	East of Locks Lane	1,335	1,315

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2.20 Table 2.1 shows that Scott Road and Goonoo Goonoo Road carried some 950 to 1,650 vehicles per hour two-way during the surveyed weekday afternoon and Saturday peak periods. Flows on Hilton Street, Karwin Street and Locks Lane were less than 100 vehicles per hour two-way.

2.21 The surveyed intersections have been analysed using the SIDRA program. SIDRA provides a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

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0 to 14	=	“A”	Good
15 to 28	=	“B”	Acceptable delays and spare capacity
29 to 42	=	“C”	Satisfactory but accident study required
43 to 56	=	“D”	Near capacity and accident study required
57 to 70	=	“E”	At capacity and requires other control mode
>70	=	“F”	Unsatisfactory and requires other control mode

- 2.22 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.
- 2.23 The analysis found that the roundabout controlled intersection of Scott Road with Goonoo Goonoo Road and Vera Street is operating with average delays, for the movement with highest average delay, of less than 15 seconds per vehicle during peak periods. This represents LOS A/B, a good level of service.
- 2.24 The unsignalised intersections of Scott Road with Hilton Street, Karwin Street and Locks Lane are operating with average delays, for the movements with highest average delays, of less than 20 seconds per vehicle during peak periods. This represents LOS B, a reasonable level of service.
- 2.25 Based on the RMS surveys of home improvement centres, and traffic generation rates of 1.1 and 2.5 vehicles per hour per 100m<sup>2</sup> for weekday afternoon and Saturdays respectively for the other tenancies (based on surveys of other bulky
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goods centres), the proposed development would have the following two-way peak hour traffic generations:

- weekday afternoon:           some 300 vehicles per hour; and
- Saturday:                        some 660 vehicles per hour.

2.26 The additional traffic has been assigned to the road network, including an allowance for 20 per cent passing trade on Scott Road. Existing flows plus the additional development traffic are summarised in Table 2.2.

Road	Location	Weekday PM		Saturday lunchtime	
		Existing	Plus development	Existing	Plus development
Goonoo Goonoo Road	North of Scott Road	965	+60	1,085	+130
	South of Scott Road	1,445	+60	1,630	+130
Vera Street	West of Scott Road	690	+20	695	+45
Hilton Street	North of Scott Road	30	-	30	-
Karwin Street	South of Scott Road	30	-	30	-
Locks Lane	North of Scott Road	0	+210	25	+465
Scott Road	West Hilton Street	1,250	+160	1,295	+350
	West of Karwin Street	1,270	+160	1,315	+350
	West of Locks Lane	1,335	+130	1,315	+285
	East of Locks Lane	1,335	+150	1,315	+220

2.27 Table 2 shows that traffic increases on Locks Lane, from where primary access is proposed, would be some 210 to 465 vehicles per hour two-way during peak hours. Increases on Scott Road and Goonoo Goonoo Road would be lower at some 60 to 350 vehicles per hour two-way at peak times.

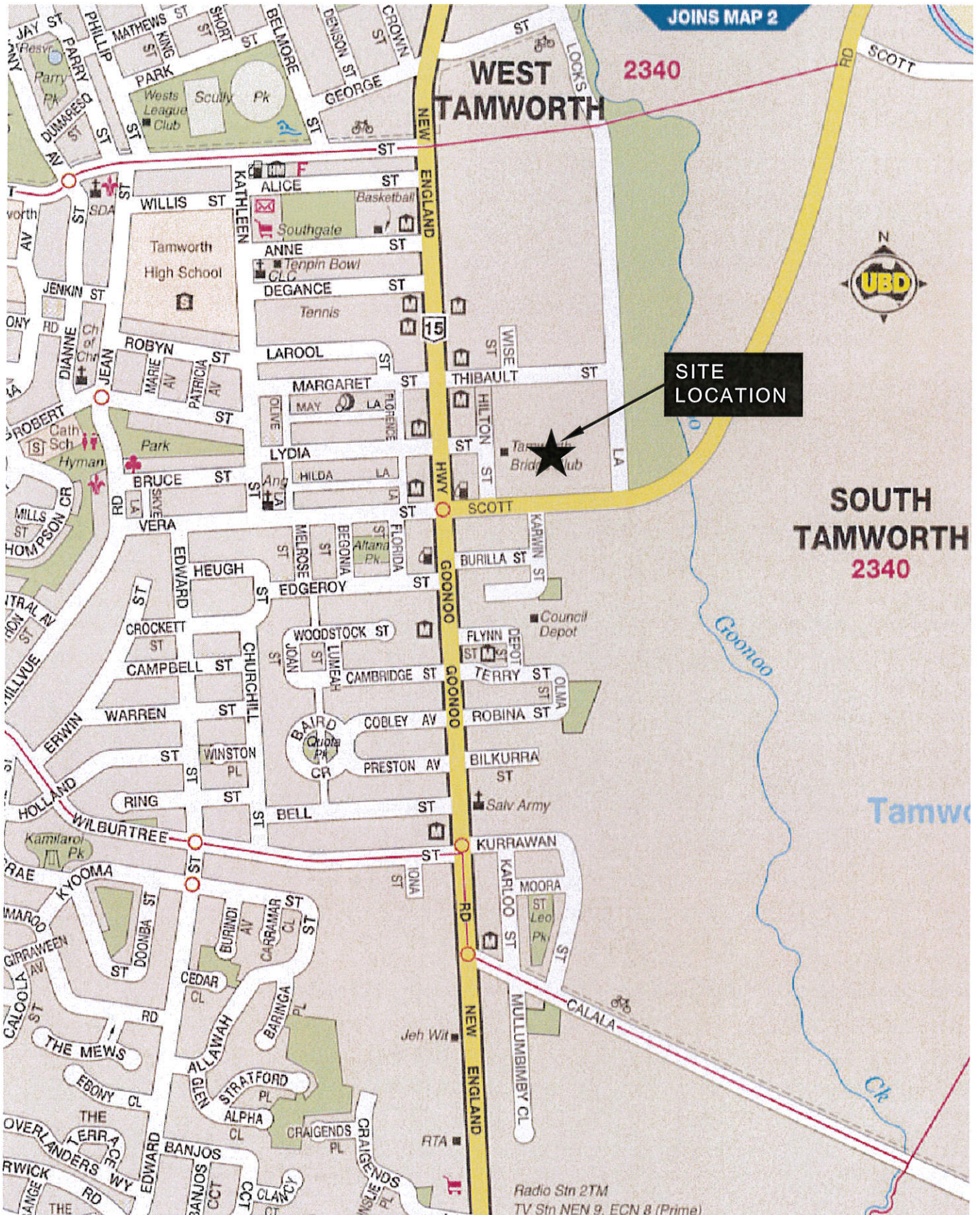
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- 2.28 The Scott Road intersections have been re-analysed with SIDRA for the additional development traffic flows. The analysis found that the intersection of Scott Road with New England Highway and Vera Street would operate with average delays, for the movement with highest average delay, of less than 20 seconds per vehicle during peak periods. This represents LOS B, a good level of service.
- 2.29 The intersections of Scott Road with Hilton Street and Karwin Street would continue to operate with average delays, for the movements with highest average delays, of less than 20 seconds per vehicle during peak periods. This represents LOS B, a reasonable level of service.
- 2.30 To accommodate traffic turning to and from Locks Lane, the intersection of Scott Road with Locks Lane would require upgrading. In a meeting with RMS, the following upgrade options were discussed:
- right turn bay or 'seagull' type intersection; and
  - roundabout.
- 2.31 We have examined the operation of the Scott Road/Locks Lane intersection with a seagull intersection (right turn bay in Scott Road and protected area for vehicles turning right from Locks Lane).
- 2.32 The analysis found that with this measure, the intersection would operate with average delays for the highest delayed movement of some 28 seconds per vehicle during peak periods. This represents level of service B, a reasonable level of service. The SIDRA output summaries are provided in Appendix B.
- 2.33 Therefore, with a seagull intersection at Scott Road/Locks Lane, the road network will be able to cater for the additional traffic from the proposed development.
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2.34 A concept design for the seagull intersection is shown in drawings prepared by Henry & Hymas.

Summary

2.35 In summary, the main points relating to the transport aspects of the planning proposal are as follows:

- i) the site has frontage to Scott Road and Locks Lane;
  - ii) the planning proposal would provide for a Masters store of some 13,519m<sup>2</sup> plus separate tenancies of 1,690m<sup>2</sup>;
  - iii) the potential development would increase employment and retail densities close to good public transport services and is consistent with government objectives to reduce private car travel and encourage public transport use;
  - iv) the proposed access arrangements from Scott Road and Locks Lane are considered appropriate;
  - v) subject to minor modifications to accommodate vehicle swept paths, the proposed arrangements for service vehicles are considered appropriate;
  - vi) the following works are suggested:
    - a seagull intersection on Scott Road at Locks Lane;
  - vii) with this measure, the road network will be able to cater for the additional traffic from the proposed development.
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## Location Plan

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd\_hs

Ref: 8441

15 April 2013

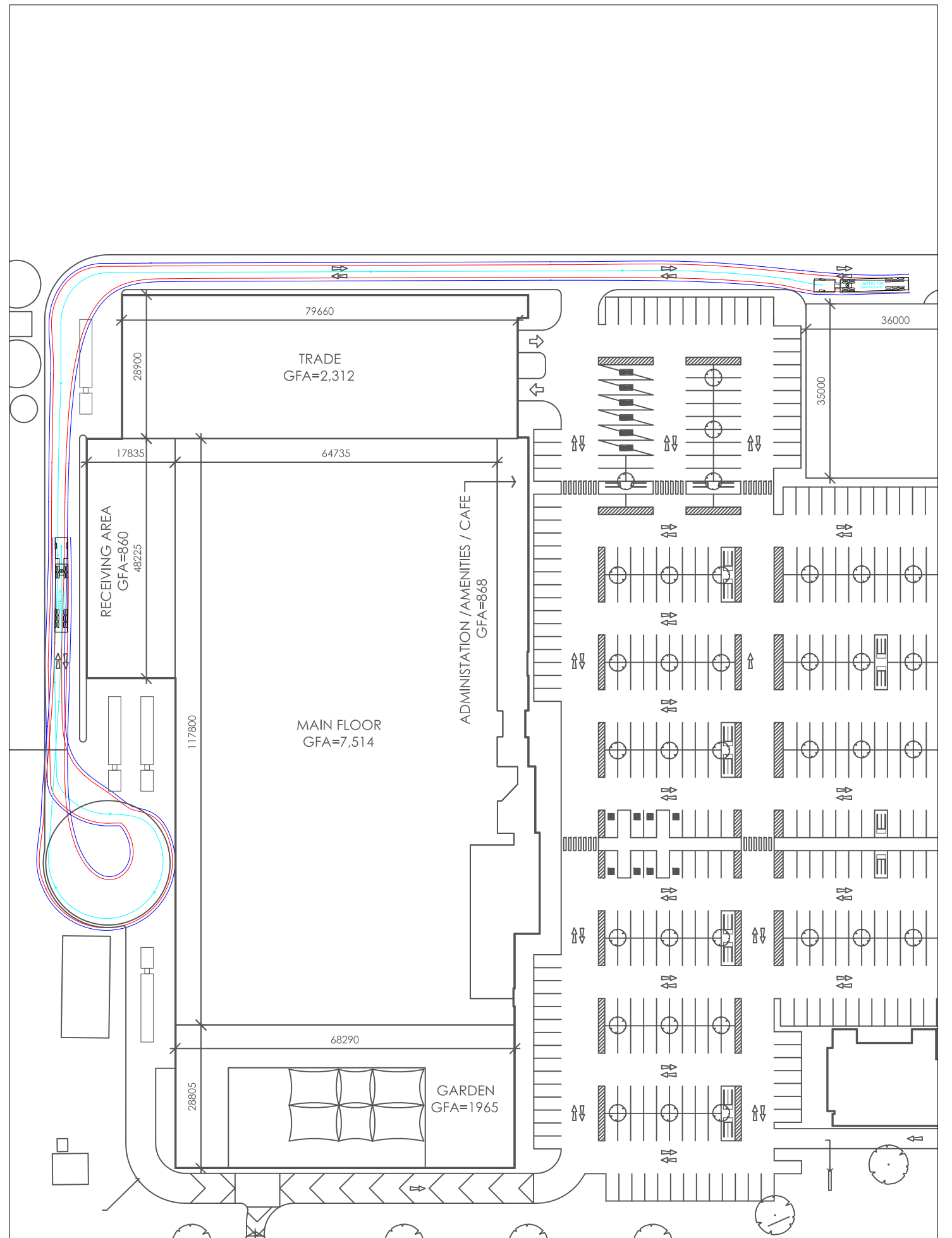
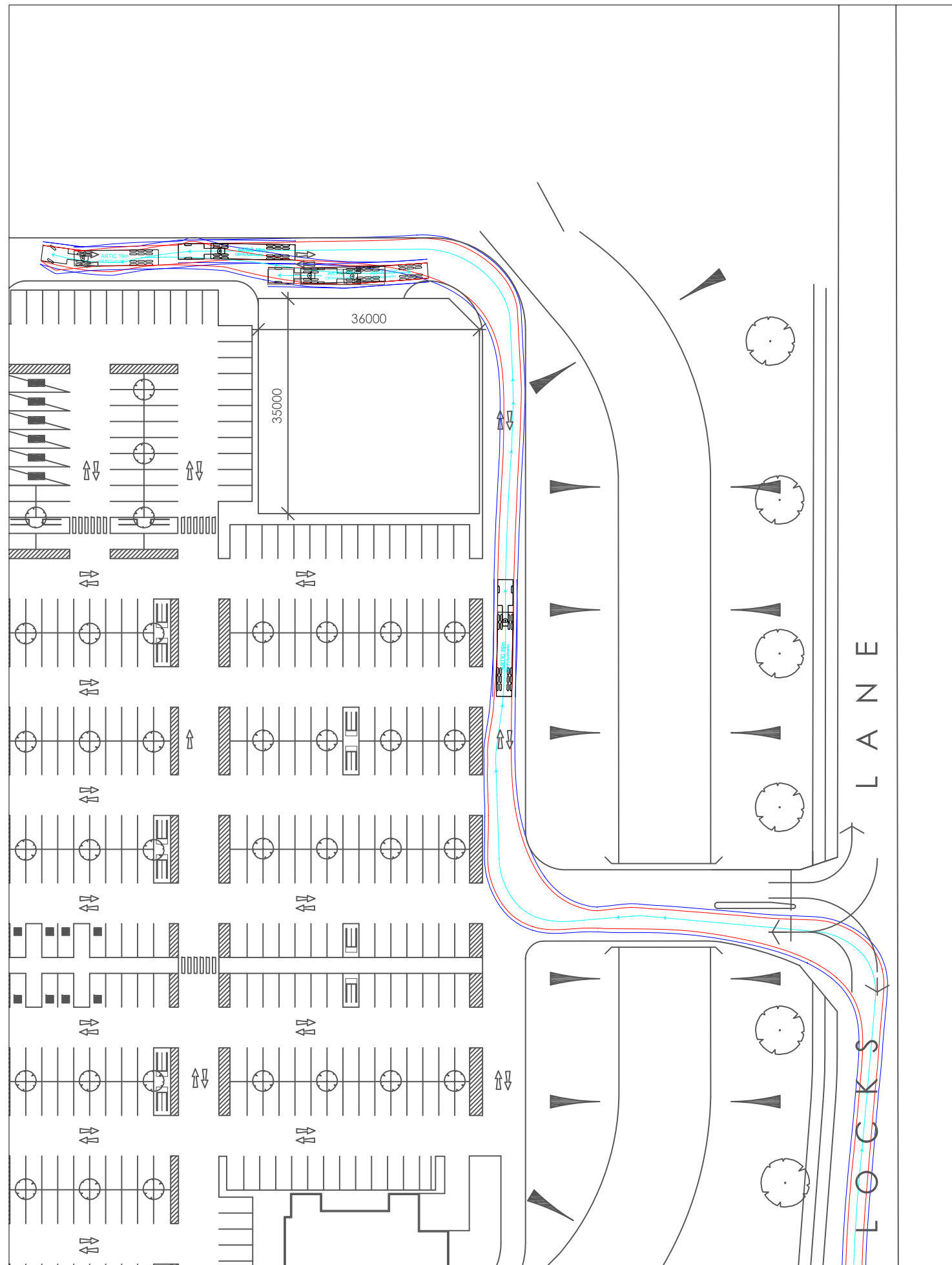
Figure 1

APPENDIX A

SERVICE VEHICLE SWEPT PATHS

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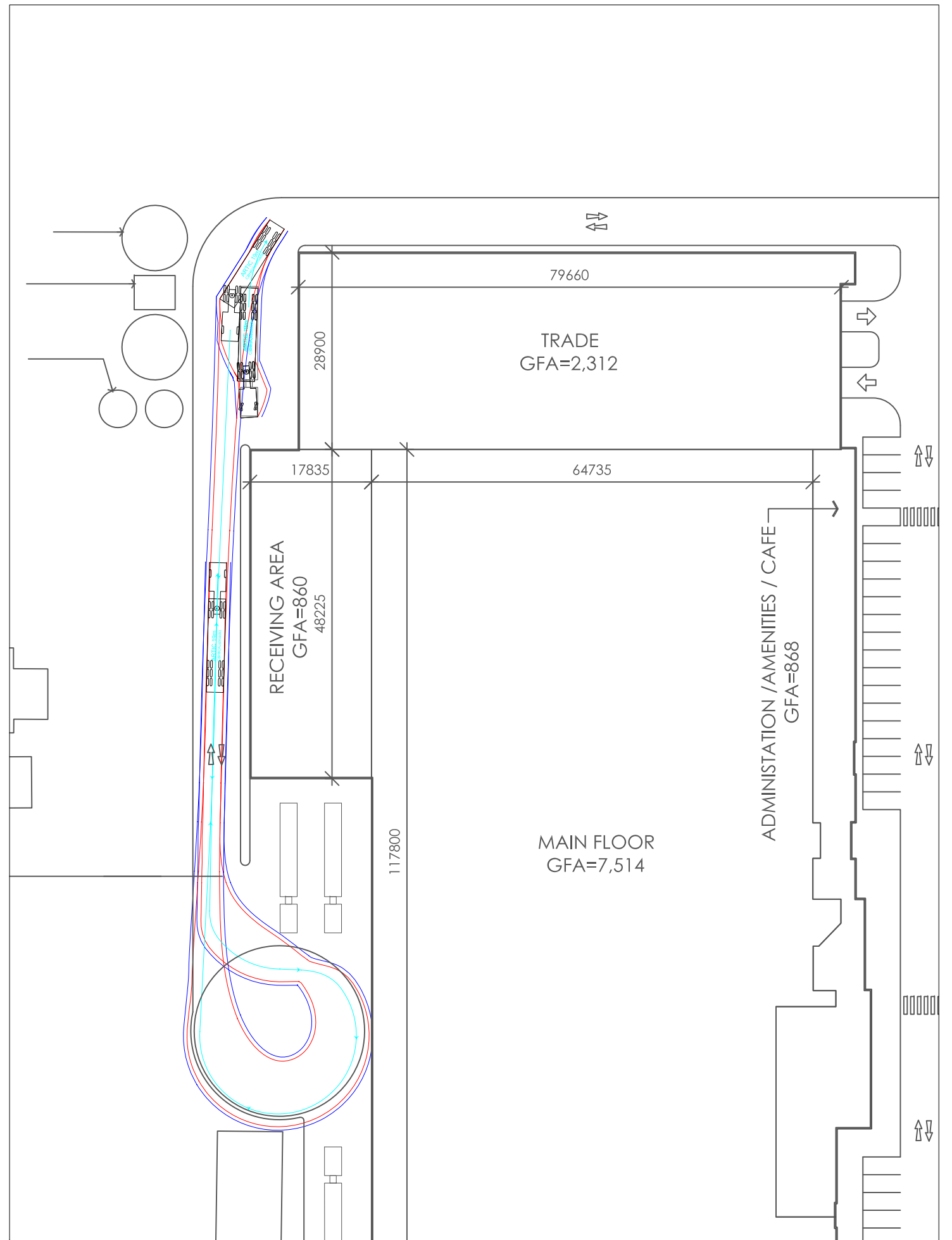
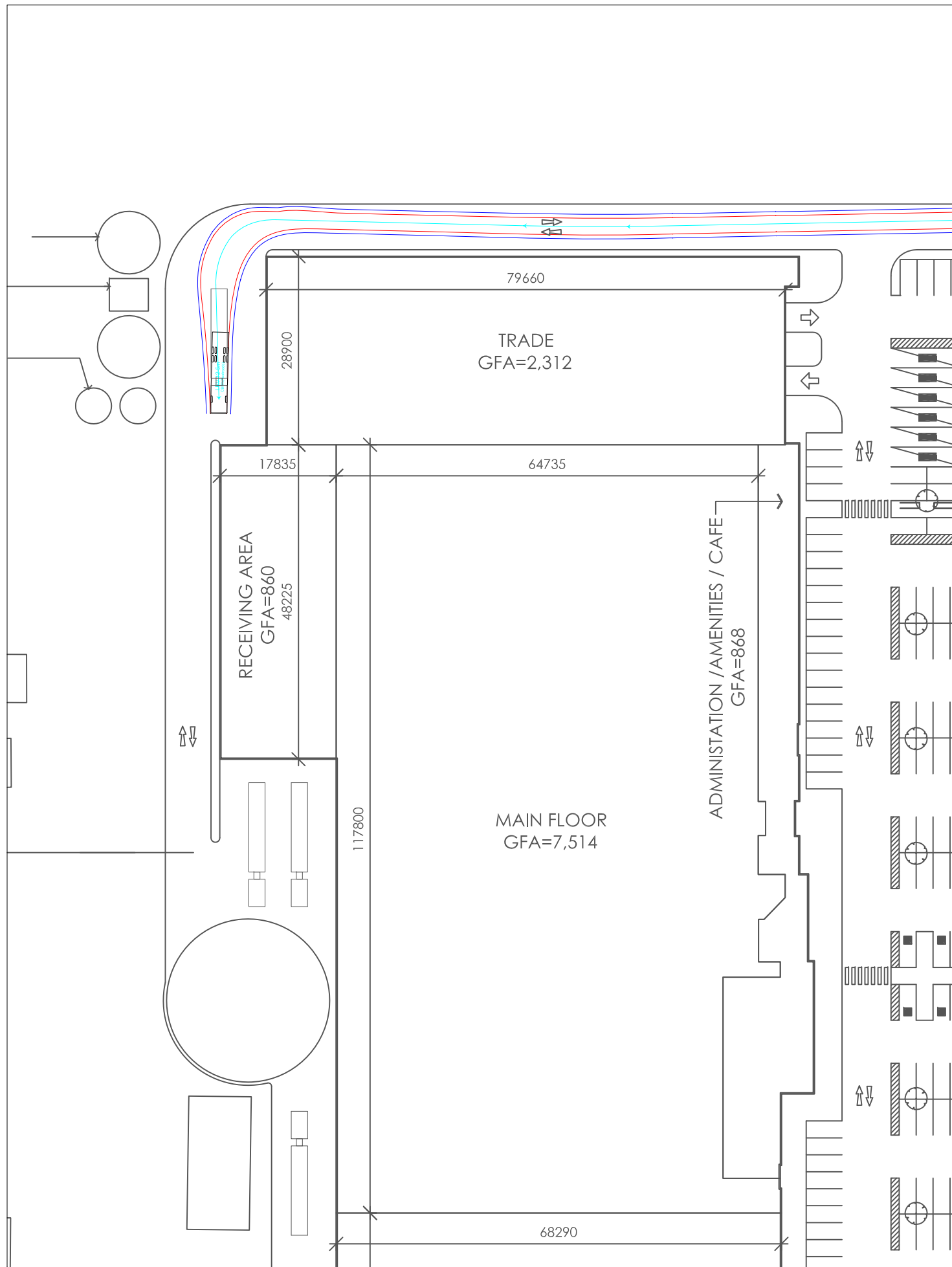


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— Swept Path of Vehicle Body  
 — Swept Path of Clearance to Vehicle Body

## 19m ARTICULATED VEHICLE SWEEP PATHS

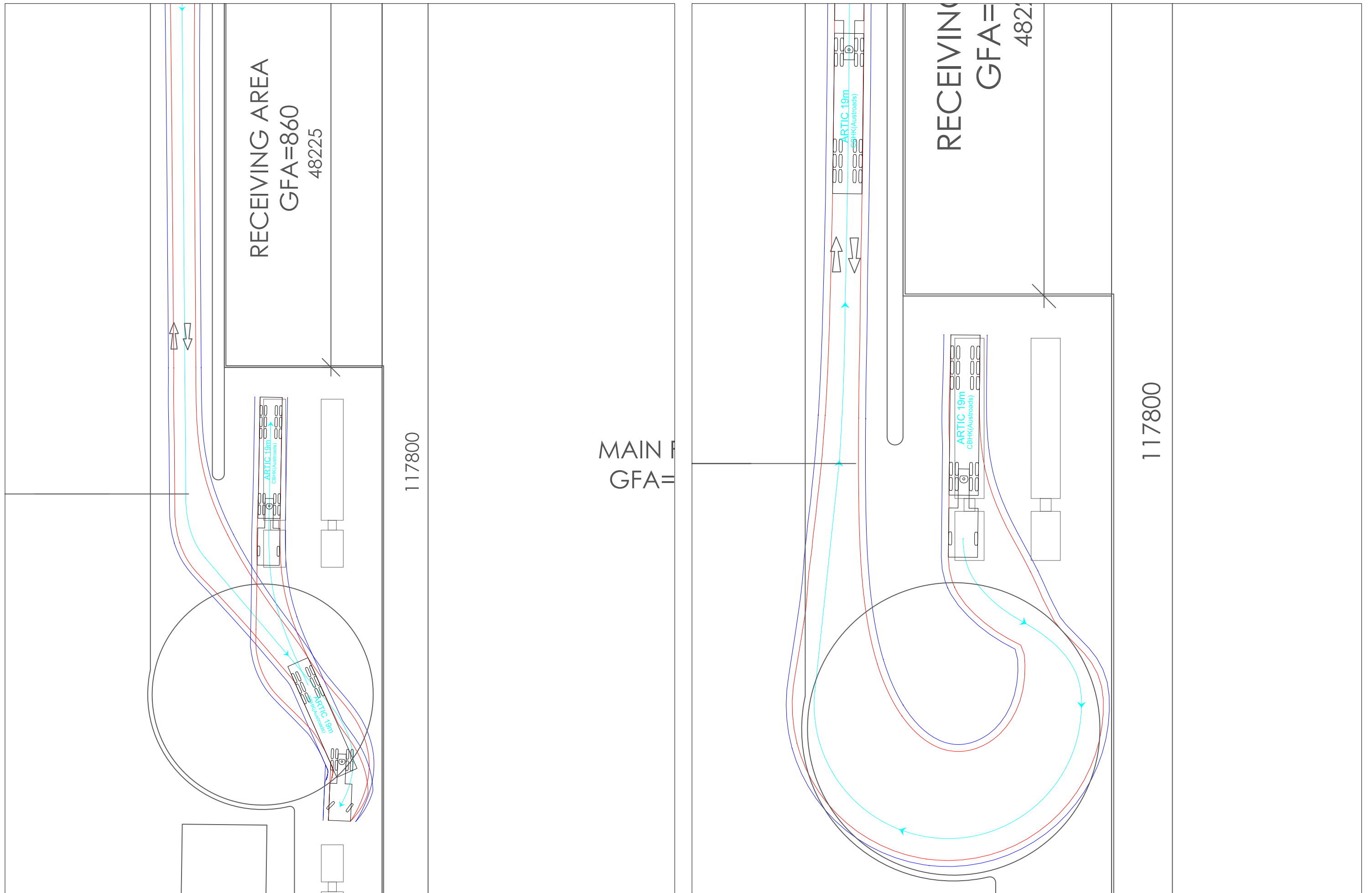




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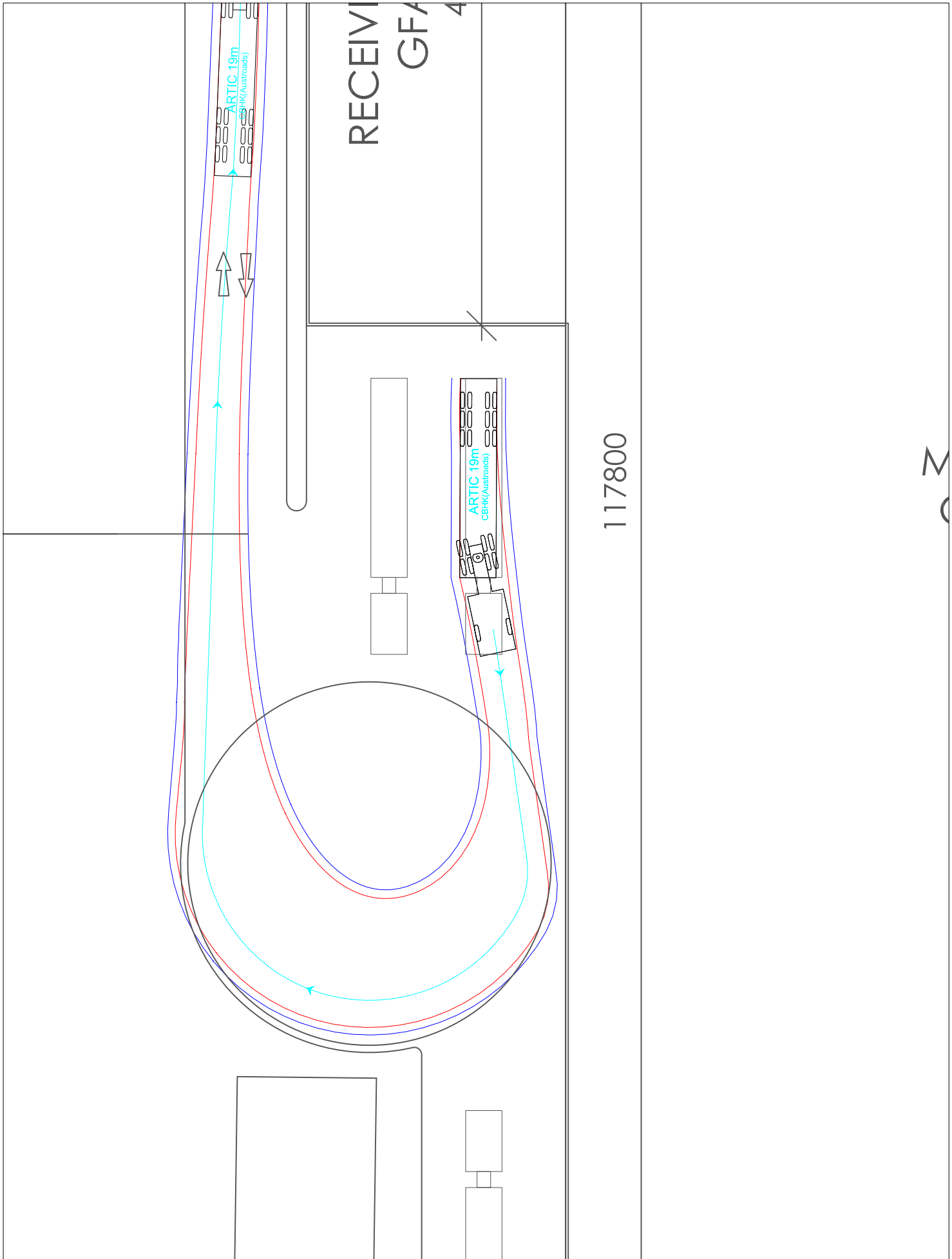
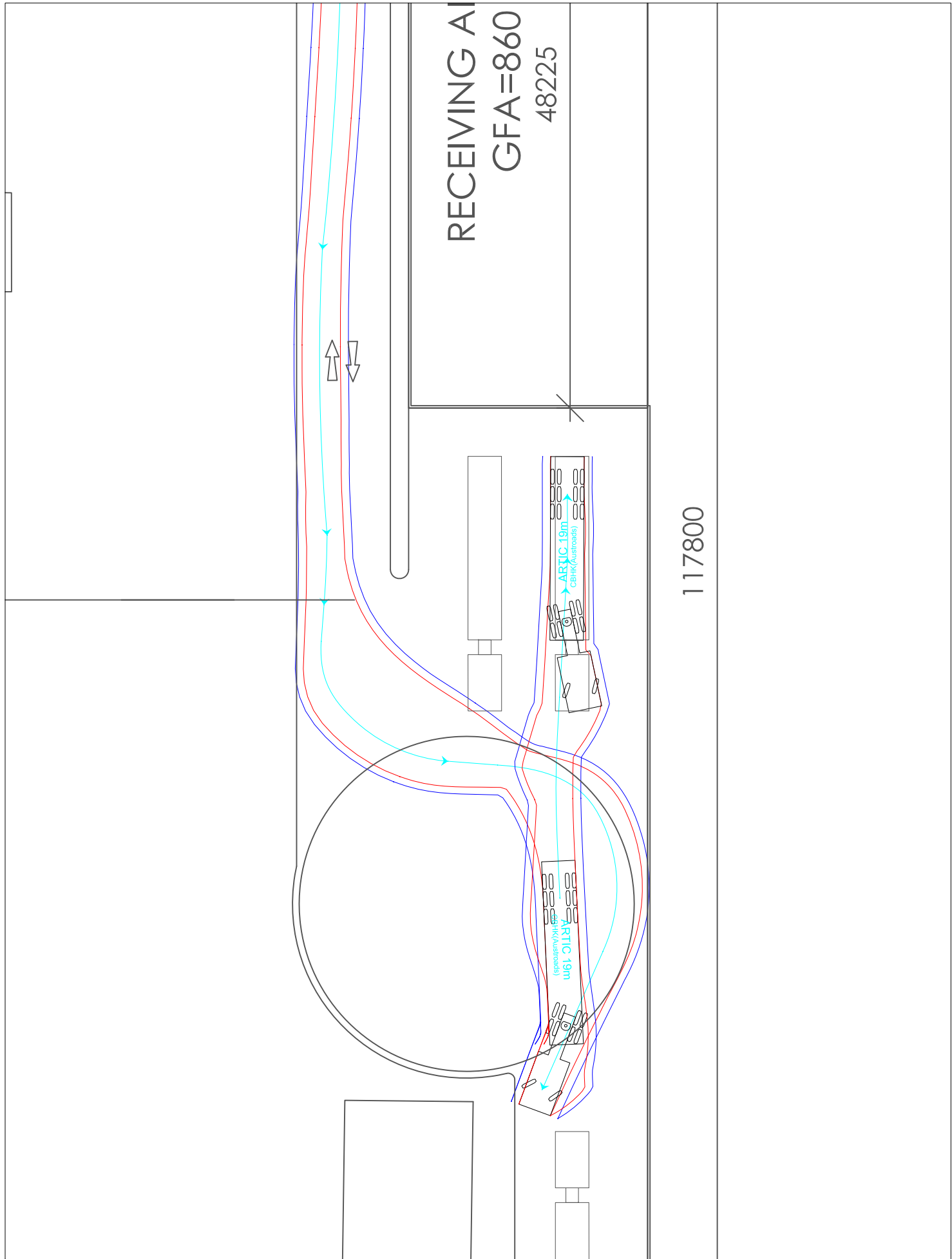
**19m ARTICULATED VEHICLE  
 SWEEP PATHS**



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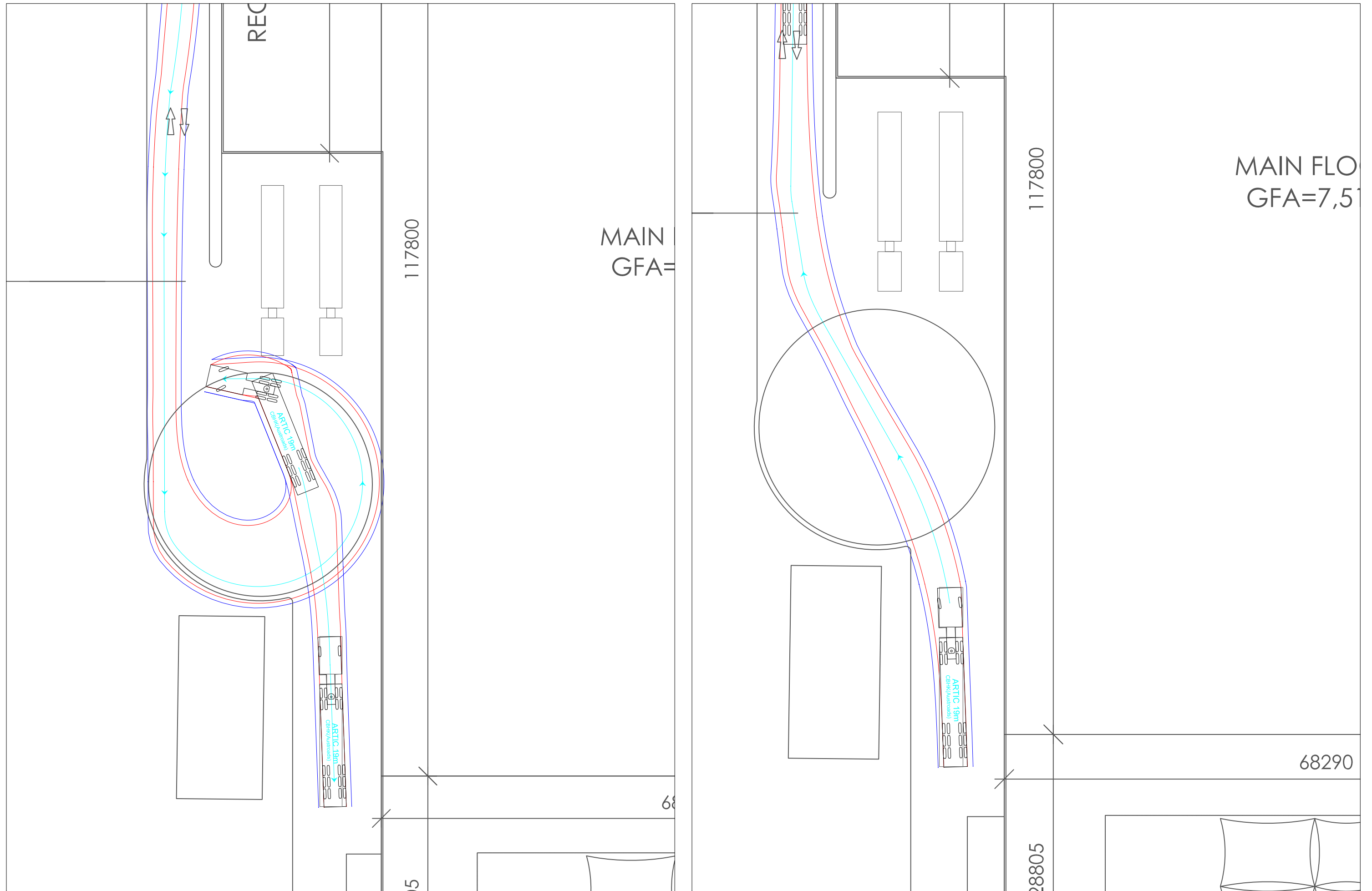
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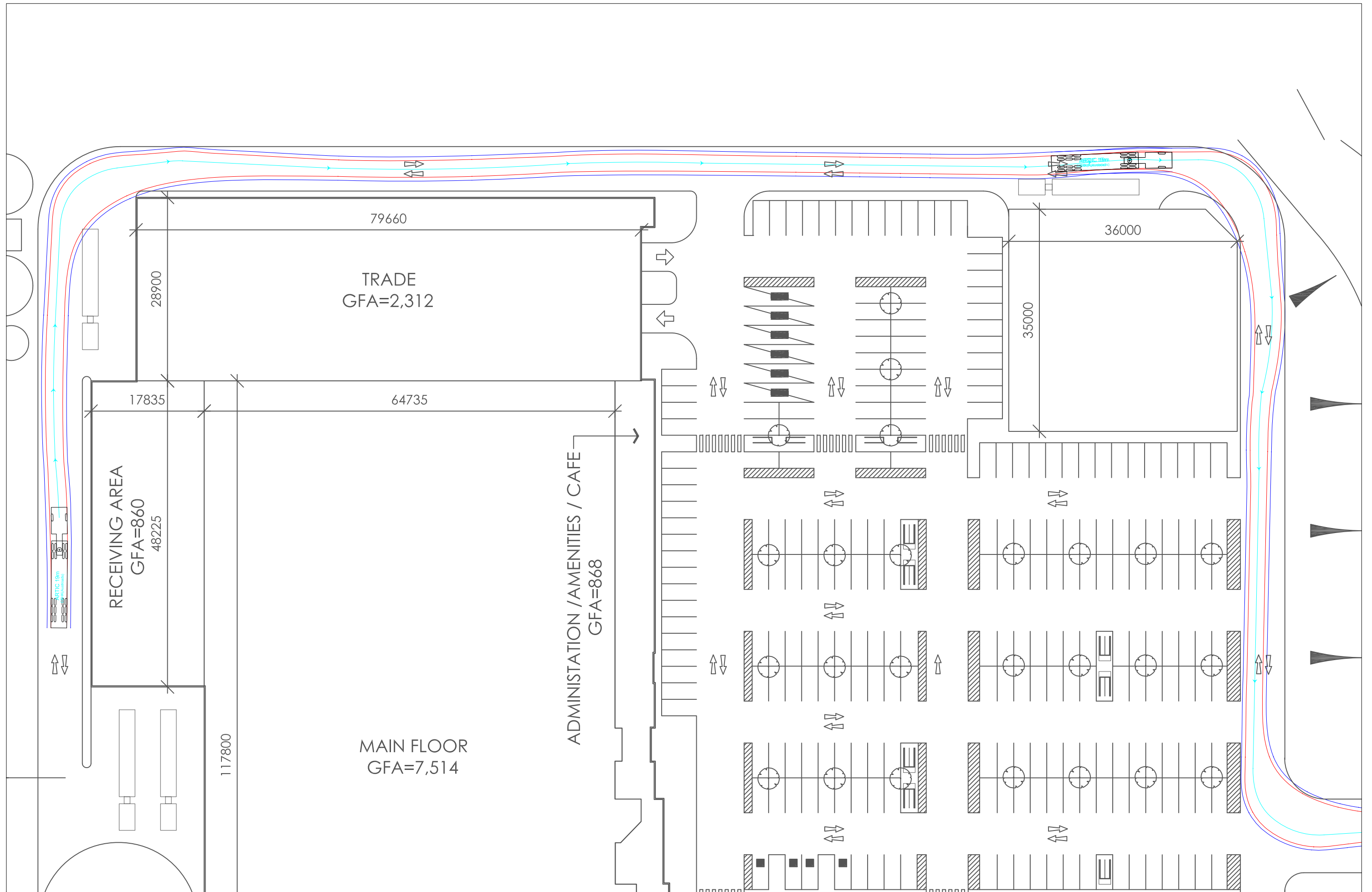
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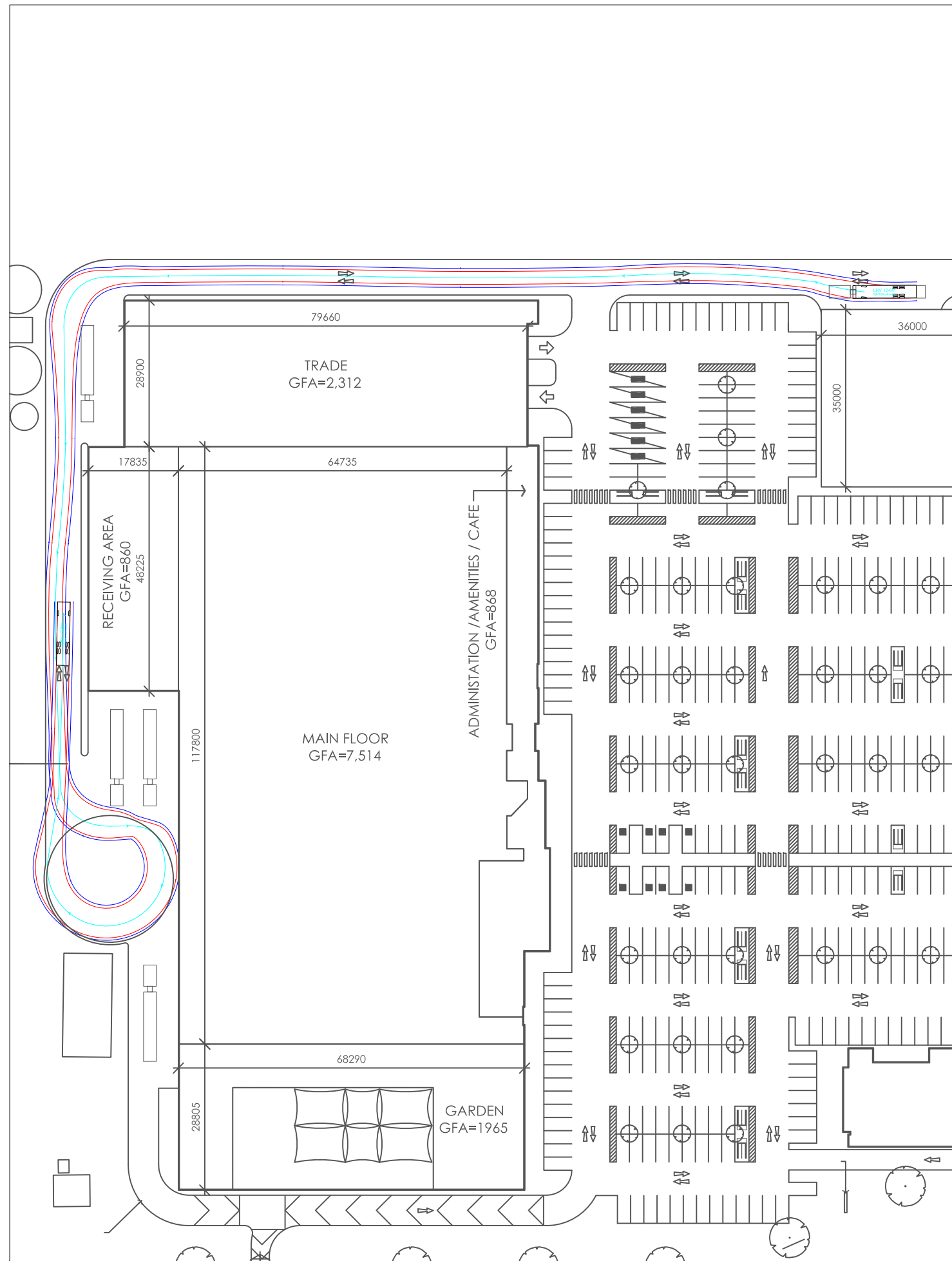
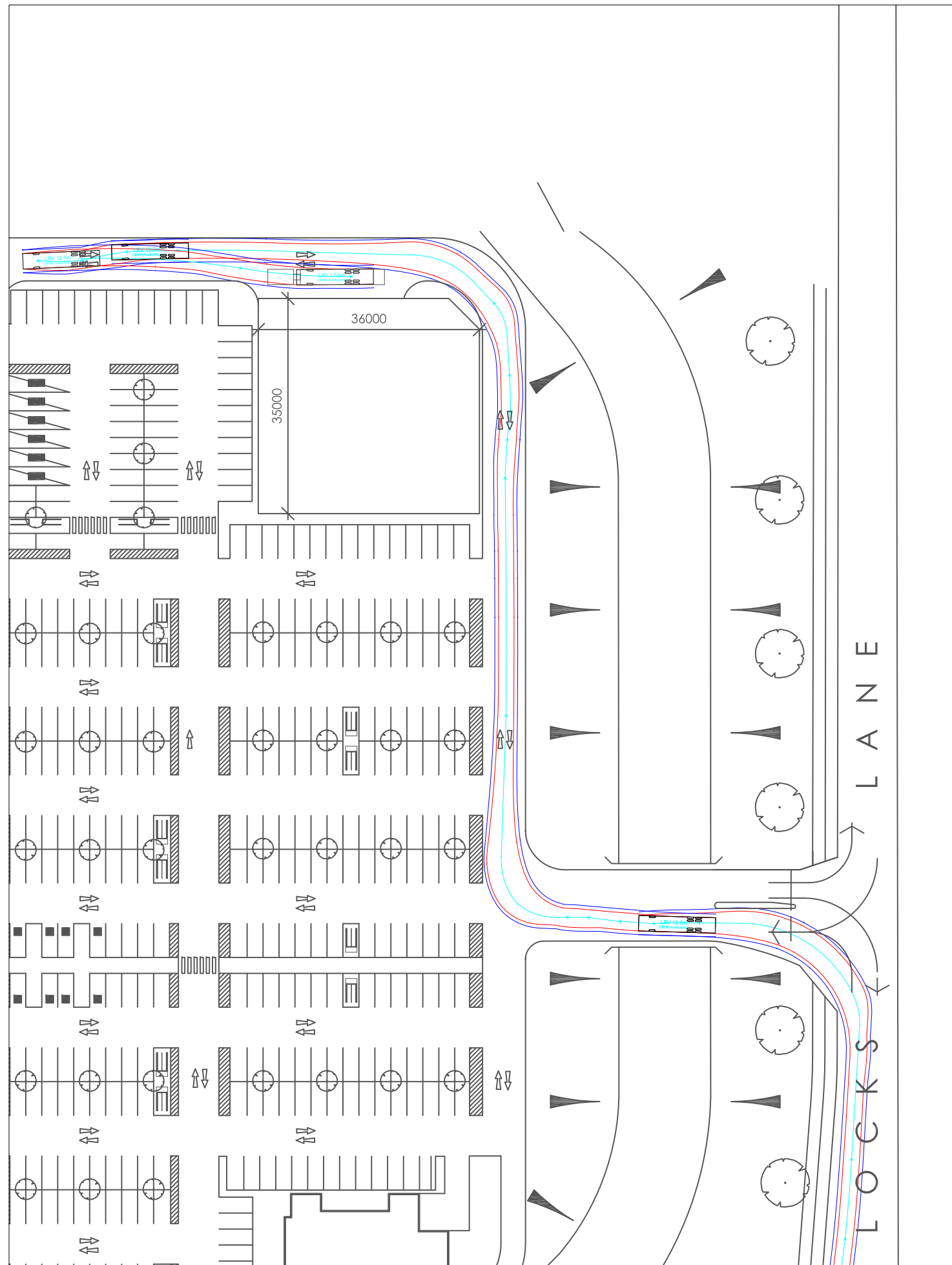
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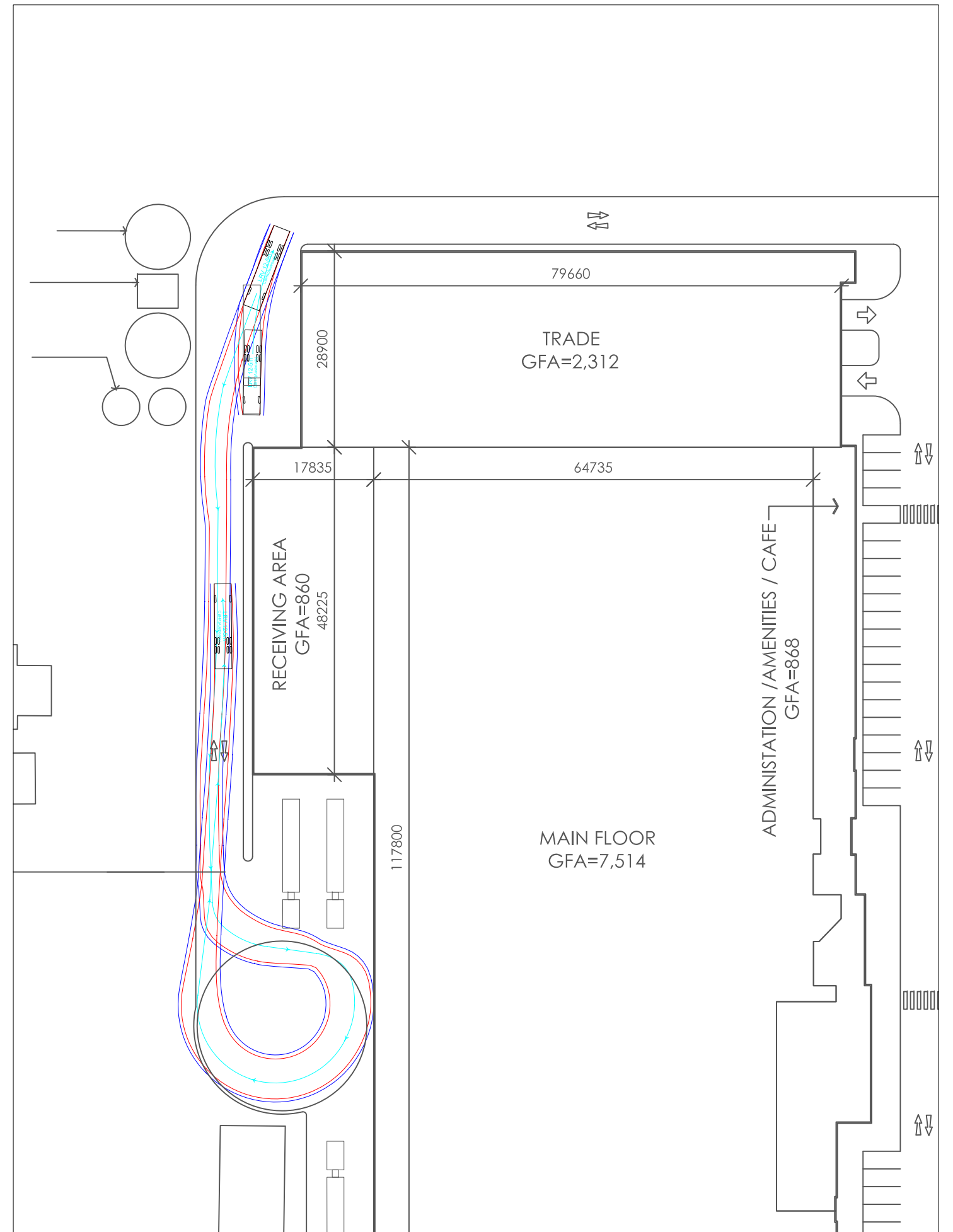
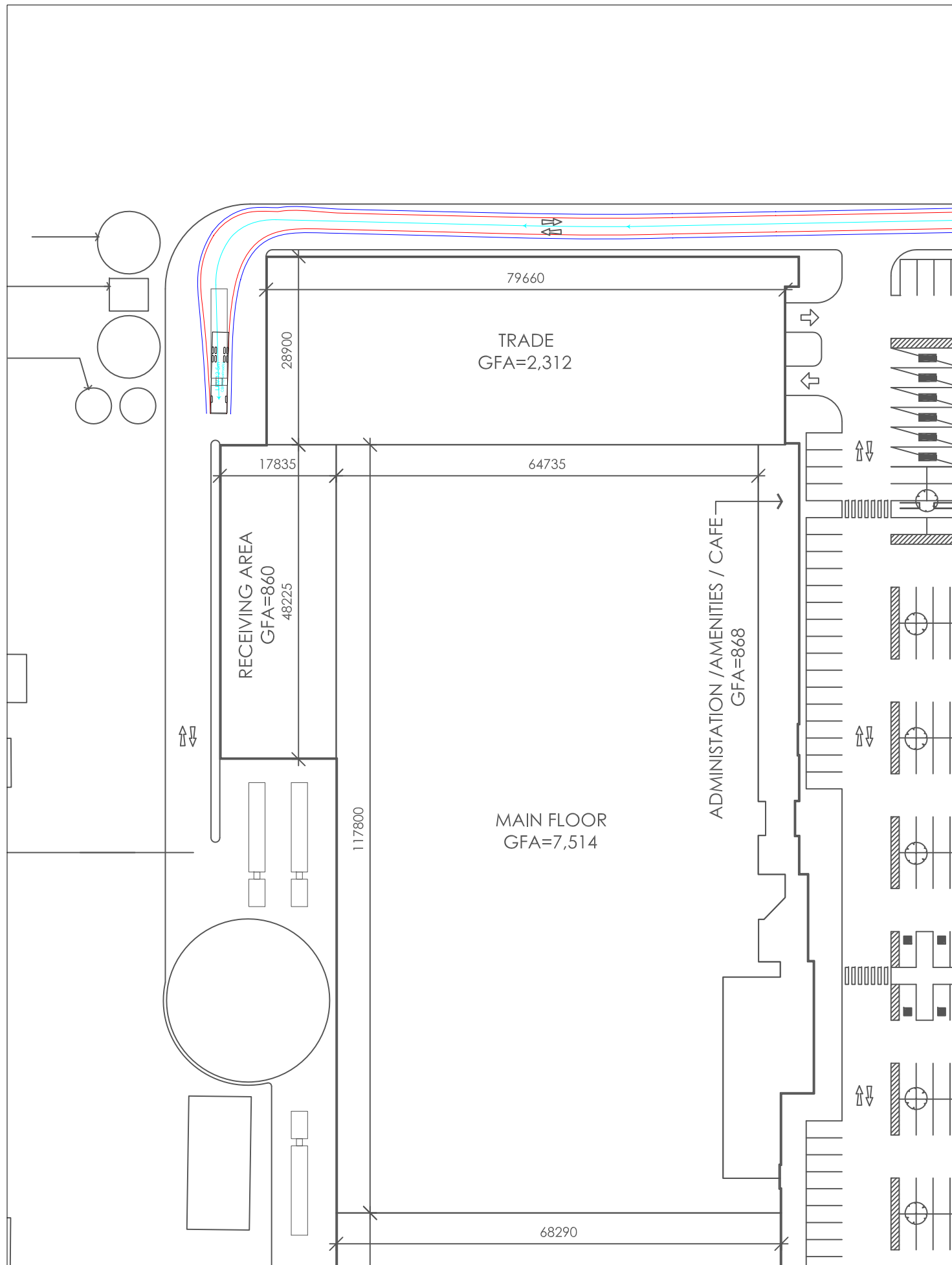
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**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**



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**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**

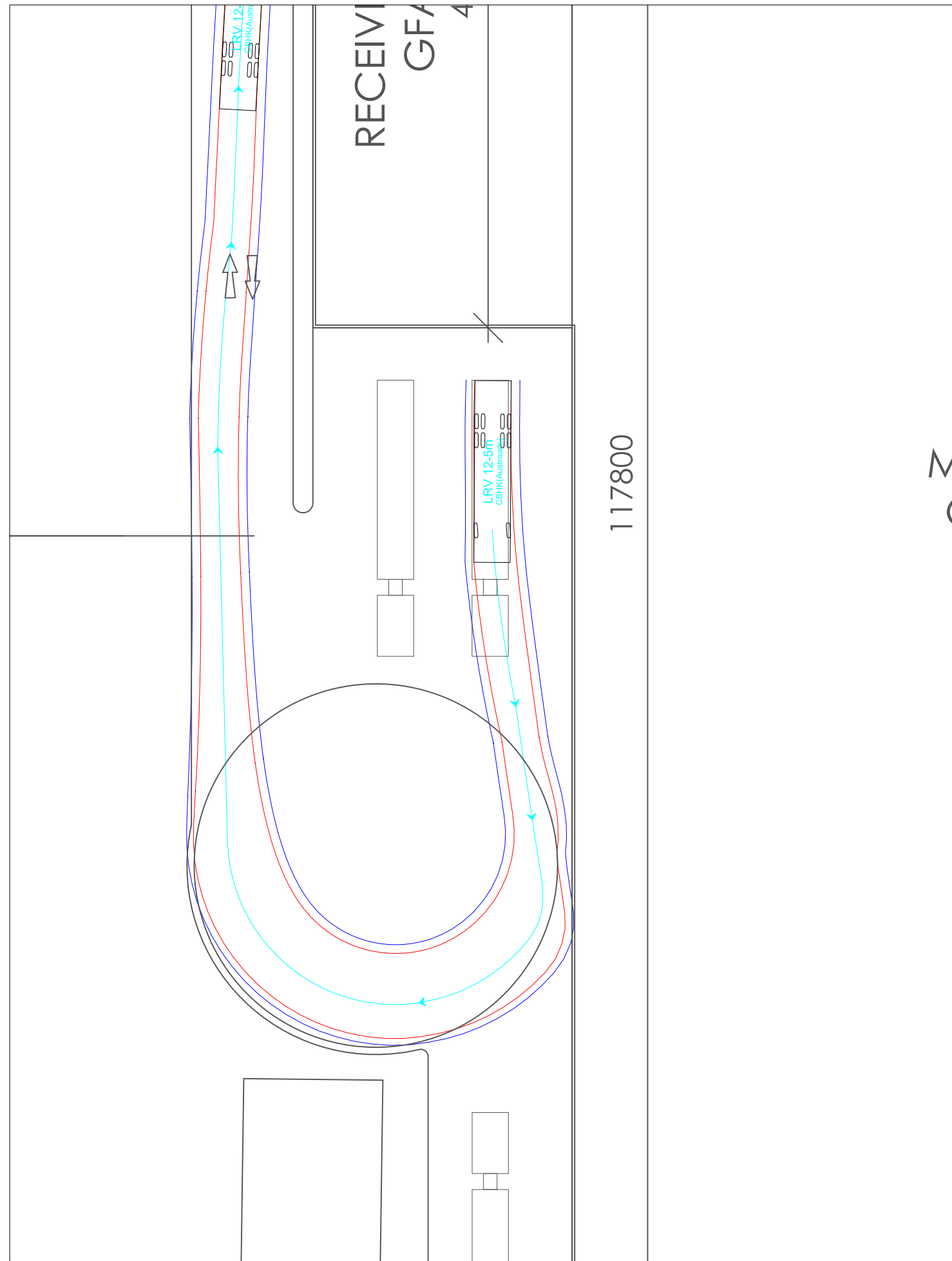
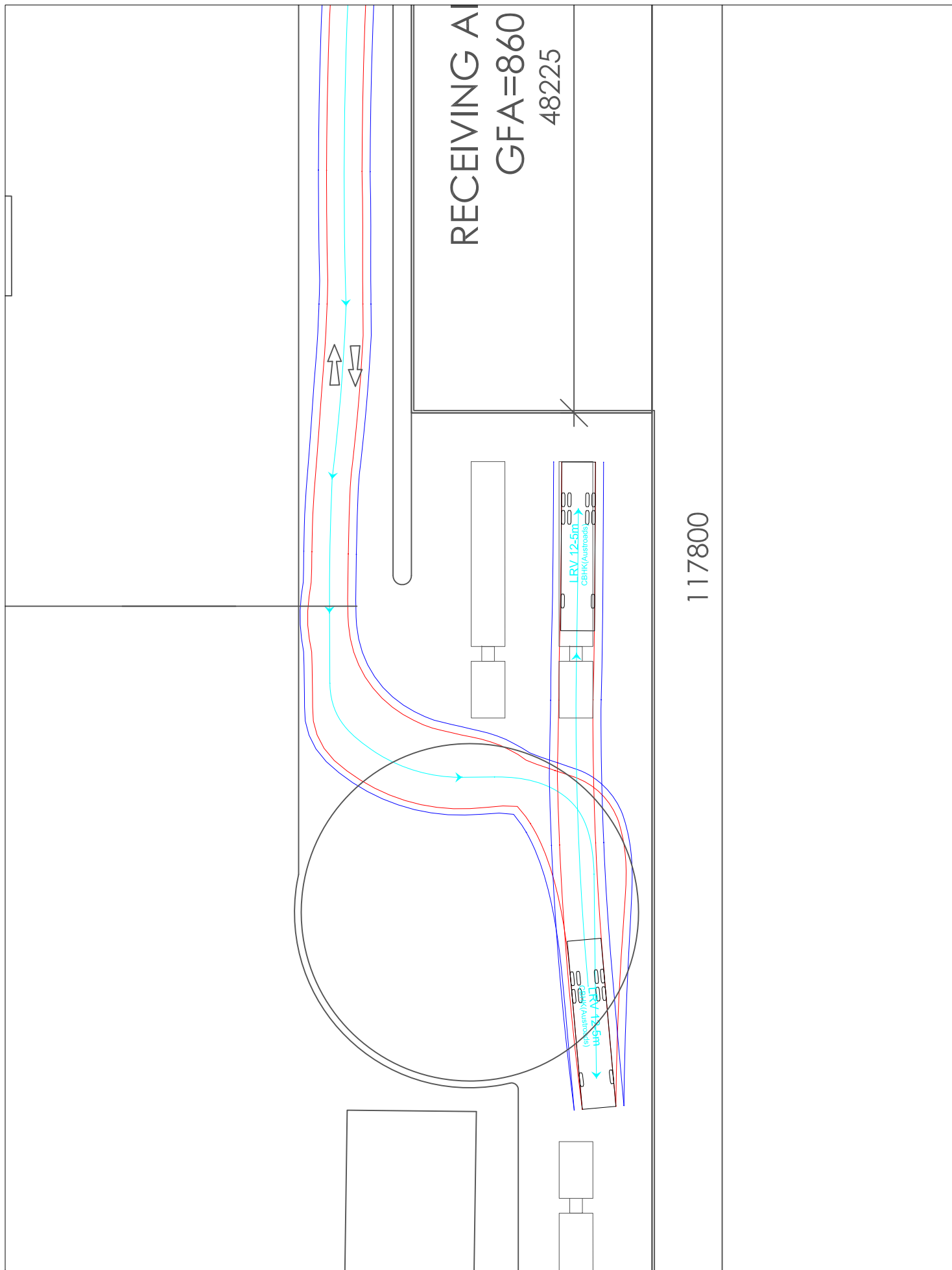


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**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**

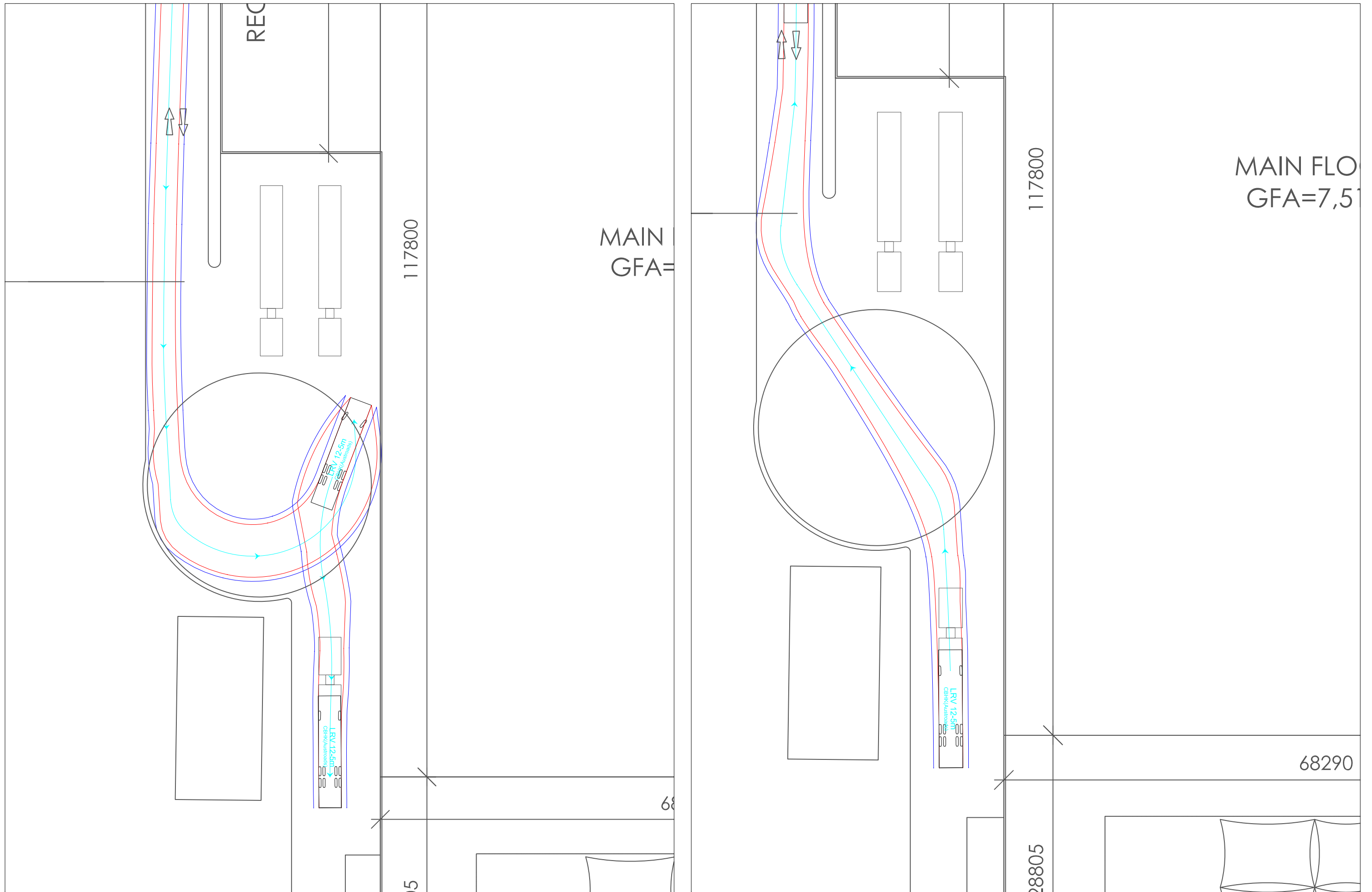




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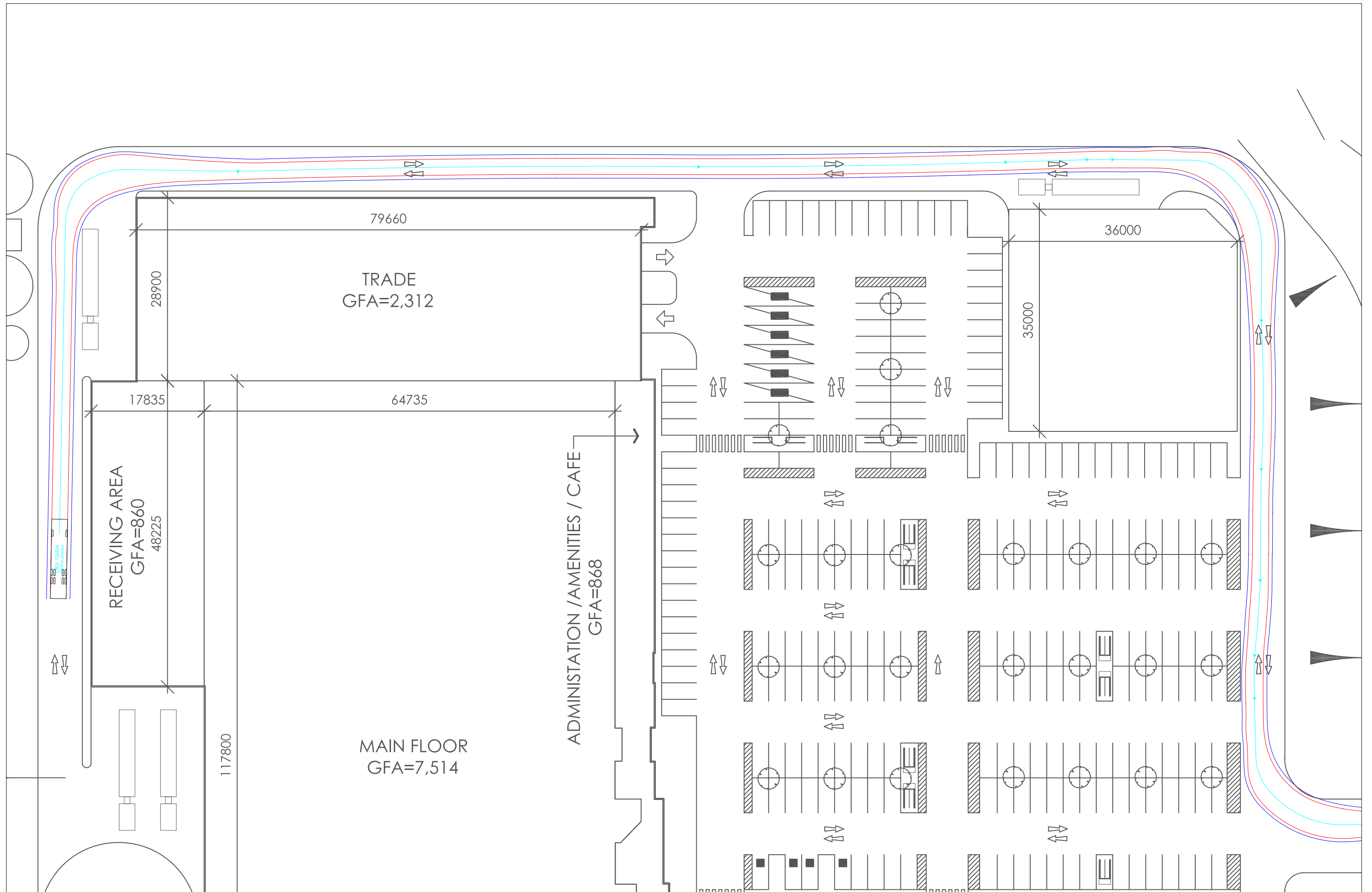
**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**



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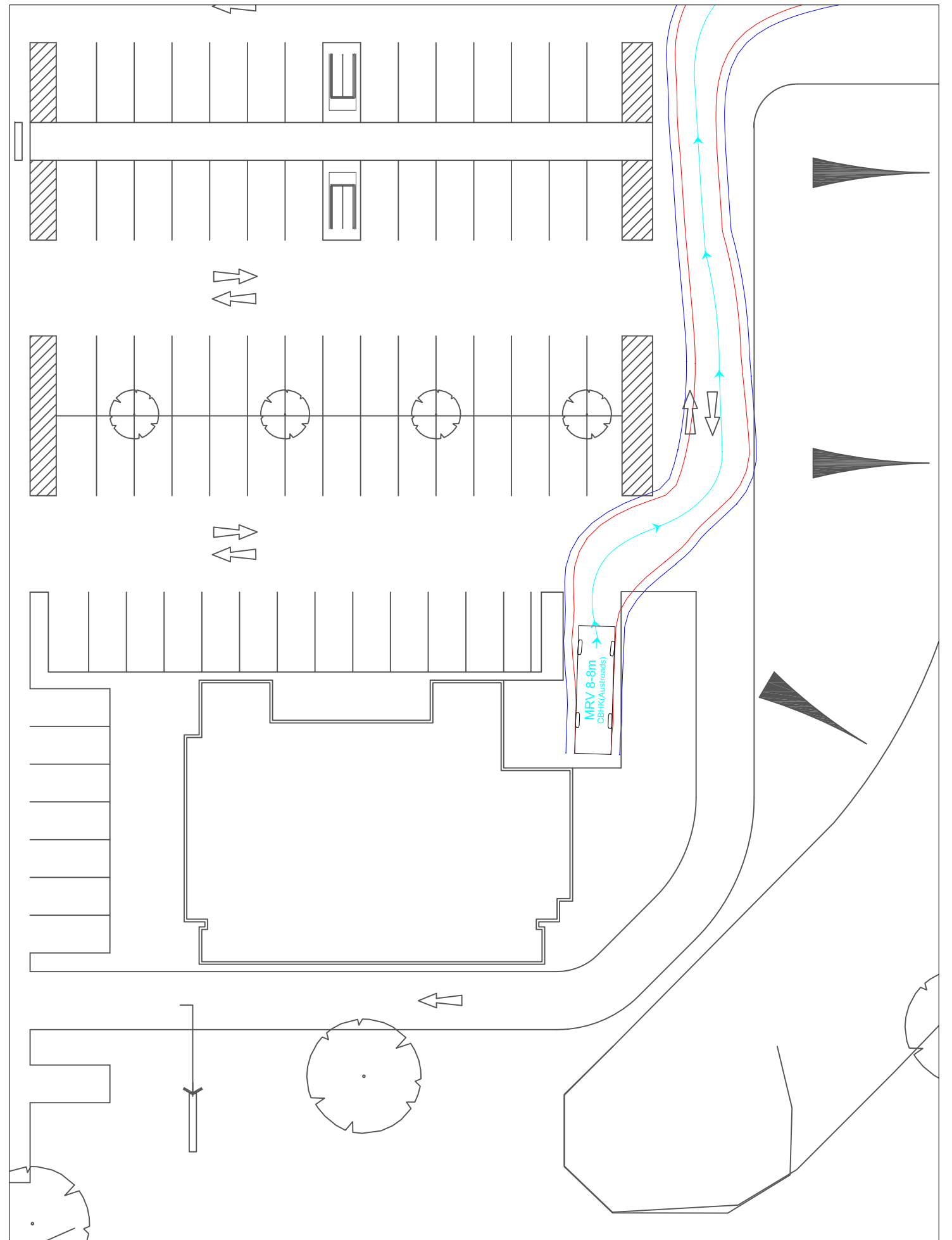
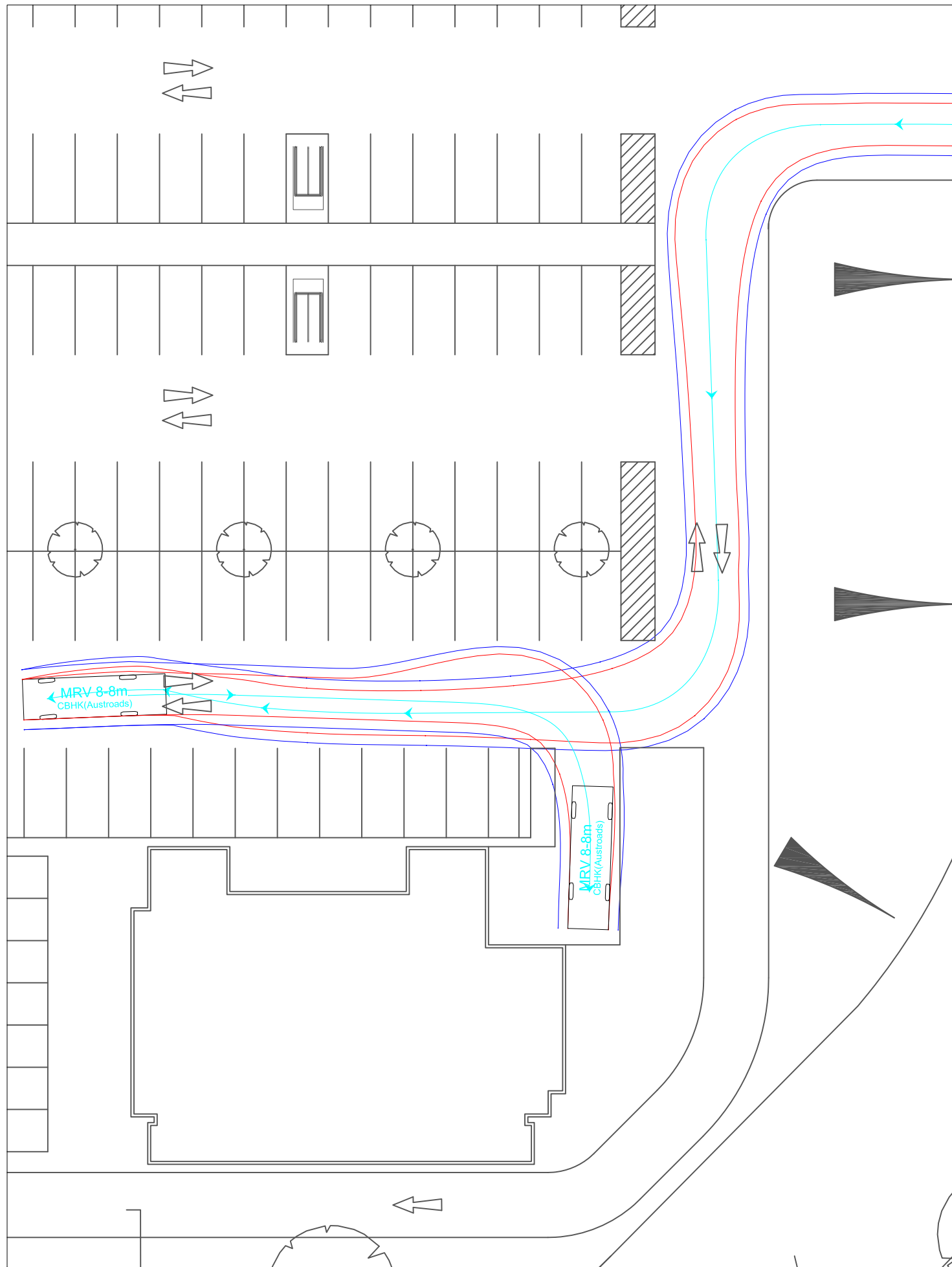
**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**



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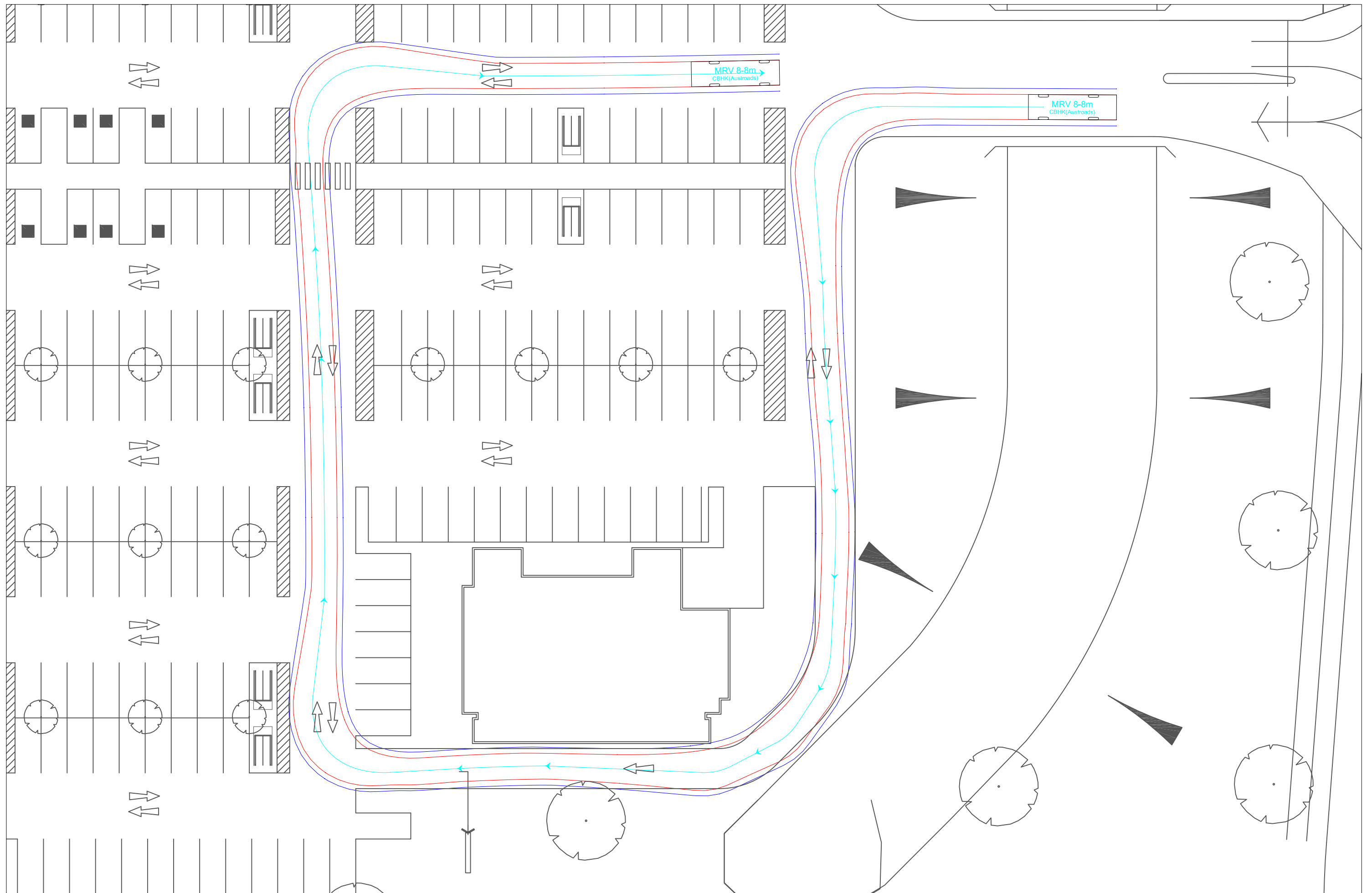
**12.5m LARGE RIGID VEHICLE  
 SWEEP PATHS**



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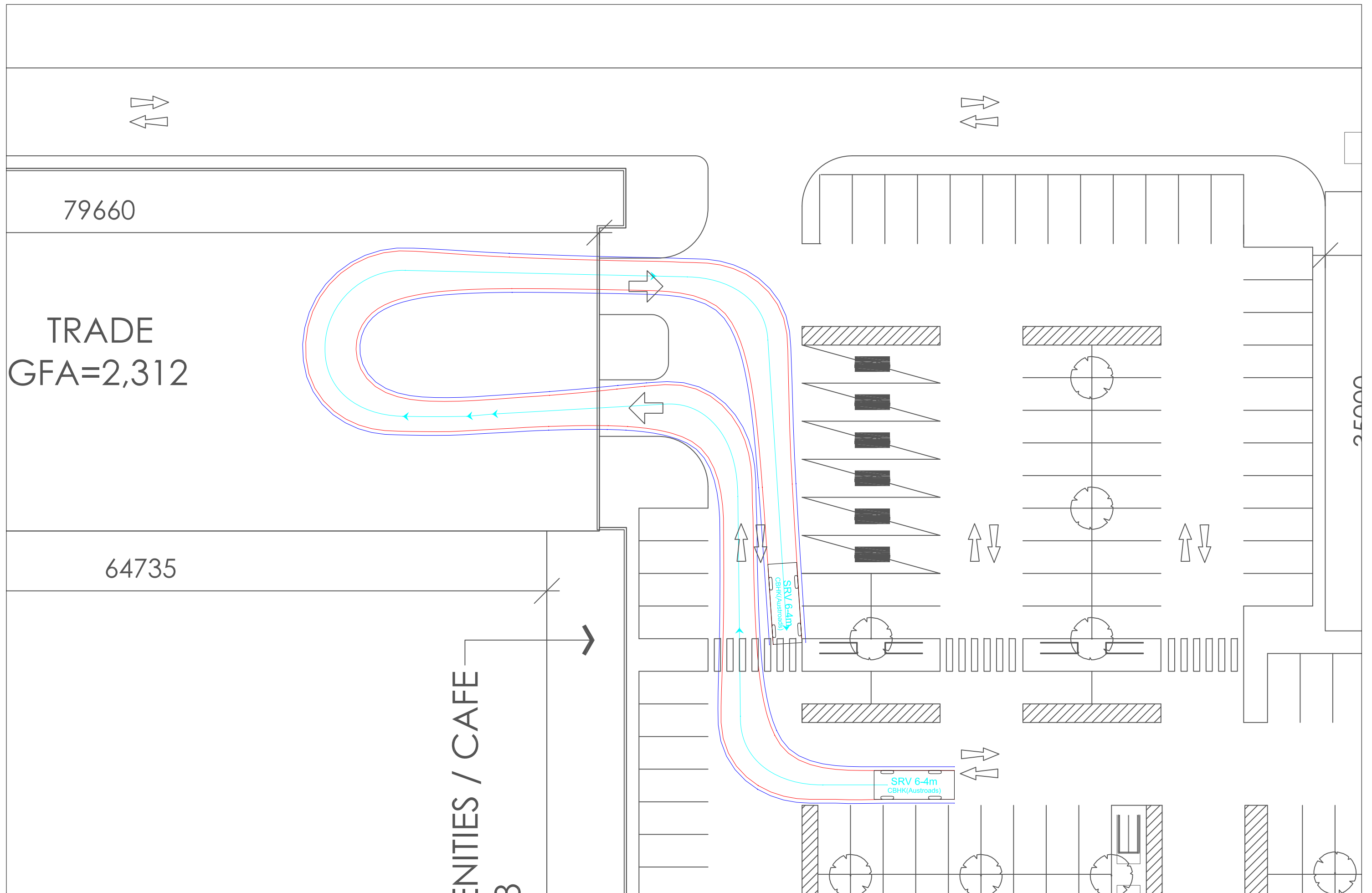
## 8.8m MEDIUM RIGID VEHICLE SWEEP PATHS



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### 8.8m MEDIUM RIGID VEHICLE SWEEP PATHS



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— Swept Path of Vehicle Body  
 — Swept Path of Clearance to Vehicle Body

**6.4m SMALL RIGID VEHICLE  
 SWEEP PATHS**

APPENDIX B

SIDRA OUTPUT SUMMARIES

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# MOVEMENT SUMMARY

Site: Scott Road & New England Highway (Thurs PM)

Scott Road & New England Highway  
Existing Thursday Afternoon peak hour traffic flow  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: New England Highway (South)											
1	L	50	2.0	0.254	6.2	LOS A	2.1	15.2	0.58	0.63	42.8
2	T	335	2.0	0.254	5.1	LOS A	2.1	15.2	0.58	0.53	42.7
3	R	200	2.0	0.254	10.9	LOS A	2.0	14.4	0.59	0.74	40.1
Approach		585	2.0	0.254	7.2	LOS A	2.1	15.2	0.58	0.61	41.7
East: Scott Road											
4	L	390	2.0	0.342	7.1	LOS A	3.1	22.1	0.70	0.70	41.7
5	T	300	2.0	0.359	6.6	LOS A	3.0	21.7	0.72	0.69	42.1
6	R	30	2.0	0.357	12.0	LOS A	3.0	21.7	0.72	0.87	40.3
Approach		720	2.0	0.359	7.1	LOS A	3.1	22.1	0.71	0.70	41.8
North: New England Highway (North)											
7	L	60	2.0	0.245	6.5	LOS A	2.0	14.0	0.58	0.65	42.7
8	T	440	2.0	0.244	5.5	LOS A	2.0	14.0	0.59	0.58	42.7
9	R	50	2.0	0.244	11.3	LOS A	1.9	13.2	0.60	0.82	40.6
Approach		550	2.0	0.244	6.1	LOS A	2.0	14.0	0.59	0.61	42.5
West: Vera Street											
10	L	50	2.0	0.069	8.0	LOS A	0.5	3.4	0.65	0.66	41.9
11	T	210	2.0	0.219	5.9	LOS A	1.9	13.4	0.68	0.62	42.2
12	R	30	2.0	0.219	11.4	LOS A	1.9	13.4	0.68	0.82	40.7
Approach		290	2.0	0.218	6.8	LOS A	1.9	13.4	0.68	0.65	42.0
All Vehicles		2145	2.0	0.359	6.8	LOS A	3.1	22.1	0.64	0.65	42.0

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout Capacity Model: SIDRA Standard.



# MOVEMENT SUMMARY

Site: Scott Road & New England Highway (Sat Mid)

Scott Road & New England Highway  
Existing Saturday midday peak hour traffic flow  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: New England Highway (South)											
1	L	45	2.0	0.341	5.9	LOS A	3.0	21.4	0.54	0.61	42.9
2	T	485	2.0	0.340	4.8	LOS A	3.0	21.4	0.55	0.50	42.9
3	R	310	2.0	0.340	10.6	LOS A	2.9	20.4	0.57	0.72	40.1
Approach		840	2.0	0.340	7.0	LOS A	3.0	21.4	0.55	0.59	41.8
East: Scott Road											
4	L	320	2.0	0.276	6.8	LOS A	2.4	17.3	0.66	0.67	41.9
5	T	260	2.0	0.297	6.1	LOS A	2.5	17.5	0.68	0.65	42.3
6	R	20	2.0	0.299	11.6	LOS A	2.5	17.5	0.68	0.85	40.6
Approach		600	2.0	0.297	6.6	LOS A	2.5	17.5	0.67	0.66	42.0
North: New England Highway (North)											
7	L	90	2.0	0.273	7.6	LOS A	2.4	17.1	0.72	0.73	42.1
8	T	415	2.0	0.273	6.8	LOS A	2.4	17.1	0.73	0.70	42.0
9	R	15	2.0	0.273	12.6	LOS A	2.2	15.7	0.73	0.88	39.9
Approach		520	2.0	0.273	7.1	LOS A	2.4	17.1	0.73	0.71	41.9
West: Vera Street											
10	L	60	2.0	0.102	10.2	LOS A	0.8	5.6	0.79	0.77	40.1
11	T	260	2.0	0.363	8.1	LOS A	3.6	25.6	0.89	0.81	41.1
12	R	55	2.0	0.364	13.6	LOS A	3.6	25.6	0.89	0.88	39.3
Approach		375	2.0	0.363	9.2	LOS A	3.6	25.6	0.87	0.82	40.6
All Vehicles		2335	2.0	0.363	7.3	LOS A	3.6	25.6	0.67	0.67	41.7

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).  
Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).  
Approach LOS values are based on the worst delay for any vehicle movement.  
Roundabout Capacity Model: SIDRA Standard.

# MOVEMENT SUMMARY

Site: Scott Rd & Karwin St (Thur PM)

Scott Road & Karwin St  
 Existing Thursday afternoon peak hour traffic  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Karwin Street												
3	R	5	2.0	0.006	8.8	LOS A	0.0	0.2	0.14	0.64	48.0	
Approach		5	2.0	0.006	8.8	LOS A	0.0	0.2	0.14	0.64	48.0	
East: Scott Road (East)												
4	L	70	2.0	0.038	8.2	LOS A	0.0	0.0	0.00	0.67	49.0	
Approach		70	2.0	0.038	8.2	LOS A	0.0	0.0	0.00	0.67	49.0	
West: Scott Road (West)												
12	R	5	2.0	0.004	8.7	LOS A	0.0	0.1	0.16	0.63	48.0	
Approach		5	2.0	0.004	8.7	LOS A	0.0	0.1	0.16	0.63	48.0	
All Vehicles		80	2.0	0.038	8.3	NA	0.0	0.2	0.02	0.66	48.8	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Karwin St (Sat Mid)

Scott Road & Karwin St  
 Existing Saturday midday peak hour traffic  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Karwin Street												
1	L	5	2.0	0.008	8.2	LOS A	0.1	0.4	0.06	0.62	48.7	
3	R	5	2.0	0.008	8.5	LOS A	0.1	0.4	0.06	0.68	48.4	
Approach		10	2.0	0.008	8.4	LOS A	0.1	0.4	0.06	0.65	48.5	
East: Scott Road (East)												
4	L	5	2.0	0.003	8.2	LOS A	0.0	0.0	0.00	0.67	49.0	
Approach		5	2.0	0.003	8.2	LOS A	0.0	0.0	0.00	0.67	49.0	
West: Scott Road (West)												
12	R	5	2.0	0.003	8.5	LOS A	0.0	0.1	0.03	0.68	48.5	
Approach		5	2.0	0.003	8.5	LOS A	0.0	0.1	0.03	0.68	48.5	
All Vehicles		20	2.0	0.008	8.3	NA	0.1	0.4	0.04	0.66	48.6	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Hilton St (Thurs PM)

Scott Road & Hilton Street  
Existing Thursday afternoon peak hour traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>East: Scott Road (East)</b>											
6	R	20	2.0	0.014	6.8	LOS A	0.1	0.5	0.03	0.63	42.9
Approach		20	2.0	0.014	6.8	LOS A	0.1	0.5	0.03	0.63	42.9
<b>North: Hilton Street</b>											
7	L	5	2.0	0.003	7.2	LOS A	0.0	0.0	0.00	0.64	43.8
Approach		5	2.0	0.003	7.2	LOS A	0.0	0.0	0.00	0.64	43.8
<b>West: Scott Road (West)</b>											
10	L	5	2.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	43.3
Approach		5	2.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	43.3
All Vehicles		30	2.0	0.014	6.8	NA	0.1	0.5	0.02	0.63	43.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Hilton St (Sat Mid)

Scott Road & Hilton Street  
 Existing Saturday midday peak hour traffic  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>East: Scott Road (East)</b>											
6	R	20	2.0	0.014	6.8	LOS A	0.1	0.5	0.03	0.63	42.9
Approach		20	2.0	0.014	6.8	LOS A	0.1	0.5	0.03	0.63	42.9
<b>North: Hilton Street</b>											
7	L	5	2.0	0.003	7.2	LOS A	0.0	0.0	0.00	0.64	43.8
Approach		5	2.0	0.003	7.2	LOS A	0.0	0.0	0.00	0.64	43.8
<b>West: Scott Road (West)</b>											
10	L	5	2.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	43.3
Approach		5	2.0	0.003	6.4	LOS A	0.0	0.0	0.00	0.61	43.3
All Vehicles		30	2.0	0.014	6.8	NA	0.1	0.5	0.02	0.63	43.1

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Road & New England Highway (Thurs PM+Dev)

Scott Road & New England Highway  
Existing Thursday Afternoon peak hour plus  
development traffic flow  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>South: New England Highway (South)</b>											
1	L	50	2.0	0.281	6.5	LOS A	2.4	17.4	0.63	0.66	42.6
2	T	335	2.0	0.280	5.3	LOS A	2.4	17.4	0.63	0.56	42.4
3	R	230	2.0	0.280	11.2	LOS A	2.3	16.3	0.64	0.76	39.8
Approach		615	2.0	0.280	7.6	LOS A	2.4	17.4	0.63	0.64	41.4
<b>East: Scott Road</b>											
4	L	420	2.0	0.371	7.1	LOS A	3.4	24.5	0.72	0.71	41.6
5	T	320	2.0	0.414	6.7	LOS A	3.7	26.1	0.75	0.71	41.8
6	R	60	2.0	0.414	12.2	LOS A	3.7	26.1	0.75	0.87	40.1
Approach		800	2.0	0.414	7.3	LOS A	3.7	26.1	0.73	0.72	41.6
<b>North: New England Highway (North)</b>											
7	L	90	2.0	0.269	6.8	LOS A	2.2	15.9	0.63	0.67	42.5
8	T	440	2.0	0.269	5.8	LOS A	2.2	15.9	0.63	0.61	42.4
9	R	50	2.0	0.269	11.6	LOS A	2.1	14.9	0.64	0.84	40.4
Approach		580	2.0	0.269	6.5	LOS A	2.2	15.9	0.63	0.64	42.2
<b>West: Vera Street</b>											
10	L	50	2.0	0.072	8.5	LOS A	0.5	3.7	0.68	0.69	41.6
11	T	230	2.0	0.251	6.3	LOS A	2.2	16.0	0.74	0.67	41.9
12	R	30	2.0	0.250	11.8	LOS A	2.2	16.0	0.74	0.83	40.5
Approach		310	2.0	0.250	7.2	LOS A	2.2	16.0	0.73	0.69	41.7
All Vehicles		2305	2.0	0.414	7.2	LOS A	3.7	26.1	0.68	0.68	41.7

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout Capacity Model: SIDRA Standard.

# MOVEMENT SUMMARY

Site: Scott Road & New England Highway (Sat Mid+Dev)

Scott Road & New England Highway  
Existing Saturday midday peak hour plus development  
traffic flow  
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>South: New England Highway (South)</b>											
1	L	45	2.0	0.405	6.6	LOS A	3.8	27.1	0.67	0.67	42.5
2	T	485	2.0	0.404	5.4	LOS A	3.8	27.1	0.67	0.57	42.3
3	R	375	2.0	0.404	11.4	LOS A	3.6	25.5	0.68	0.77	39.5
Approach		905	2.0	0.404	7.9	LOS A	3.8	27.1	0.67	0.66	41.1
<b>East: Scott Road</b>											
4	L	385	2.0	0.409	7.6	LOS A	3.7	26.3	0.74	0.74	41.5
5	T	305	2.0	0.341	5.7	LOS A	3.2	22.5	0.70	0.60	42.0
6	R	85	2.0	0.341	11.1	LOS A	3.2	22.5	0.70	0.81	40.8
Approach		775	2.0	0.409	7.2	LOS A	3.7	26.3	0.72	0.70	41.6
<b>North: New England Highway (North)</b>											
7	L	155	2.0	0.346	8.6	LOS A	3.3	23.4	0.83	0.79	41.6
8	T	415	2.0	0.346	7.9	LOS A	3.3	23.4	0.82	0.79	41.4
9	R	15	2.0	0.349	13.9	LOS A	3.0	21.1	0.82	0.92	39.2
Approach		585	2.0	0.346	8.3	LOS A	3.3	23.4	0.82	0.80	41.4
<b>West: Vera Street</b>											
10	L	60	2.0	0.120	11.8	LOS A	1.0	7.1	0.86	0.82	38.9
11	T	305	2.0	0.497	11.6	LOS A	5.9	42.2	1.00	0.99	38.9
12	R	55	2.0	0.495	17.1	LOS B	5.9	42.2	1.00	0.99	37.1
Approach		420	2.0	0.496	12.4	LOS B	5.9	42.2	0.98	0.97	38.6
All Vehicles		2685	2.0	0.496	8.5	LOS A	5.9	42.2	0.77	0.75	40.9

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Roundabout Capacity Model: SIDRA Standard.

# MOVEMENT SUMMARY

Site: Scott Rd & Karwin St (Sat  
Mid+Dev)

Scott Road, Karwin St & Stie Entry  
Existing Saturday midday plus development  
peak hour traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
South: Karwin Street												
1	L	5	2.0	0.014	10.1	LOS A	0.1	0.4	0.35	0.60	46.9	
3	R	5	2.0	0.014	10.3	LOS A	0.1	0.4	0.35	0.69	46.8	
Approach		10	2.0	0.014	10.2	LOS A	0.1	0.4	0.35	0.65	46.8	
East: Scott Road (East)												
4	L	5	2.0	0.094	8.2	LOS A	0.0	0.0	0.00	1.07	49.0	
5	T	175	2.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	60.0	
Approach		180	2.0	0.094	0.2	LOS A	0.0	0.0	0.00	0.03	59.6	
North: Site Entry												
7	L	21	2.0	0.020	8.8	LOS A	0.1	0.6	0.24	0.62	47.9	
Approach		21	2.0	0.020	8.8	LOS A	0.1	0.6	0.24	0.62	47.9	
West: Scott Road (West)												
10	L	89	2.0	0.100	9.0	LOS A	0.8	5.6	0.43	0.47	48.1	
11	T	90	2.0	0.100	0.8	LOS A	0.8	5.6	0.43	0.00	51.2	
12	R	5	2.0	0.100	9.2	LOS A	0.8	5.6	0.43	0.76	48.1	
Approach		184	2.0	0.100	5.0	LOS A	0.8	5.6	0.43	0.25	49.6	
All Vehicles		396	2.0	0.100	3.2	NA	0.8	5.6	0.22	0.18	53.5	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.



# MOVEMENT SUMMARY

Site: Scott Rd & Karwin St (Thur PM+Dev)

Scott Road, Karwin St & Site Entry  
 Existing Thursday afternoon plus development  
 peak hour traffic  
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h	
<b>South: Karwin Street</b>												
3	R	5	2.0	0.007	10.0	LOS A	0.0	0.2	0.33	0.64	47.0	
Approach		5	2.0	0.007	10.0	LOS A	0.0	0.2	0.33	0.64	47.0	
<b>East: Scott Road (East)</b>												
4	L	70	2.0	0.080	8.2	LOS A	0.0	0.0	0.00	0.84	49.0	
5	T	80	2.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	60.0	
Approach		150	2.0	0.080	3.8	LOS A	0.0	0.0	0.00	0.39	54.3	
<b>North: Site Entry</b>												
7	L	11	2.0	0.009	8.5	LOS A	0.0	0.3	0.15	0.62	48.3	
Approach		11	2.0	0.009	8.5	LOS A	0.0	0.3	0.15	0.62	48.3	
<b>West: Scott Road (West)</b>												
10	L	42	2.0	0.048	8.8	LOS A	0.3	2.5	0.36	0.51	48.2	
11	T	40	2.0	0.048	0.6	LOS A	0.3	2.5	0.36	0.00	52.3	
12	R	5	2.0	0.048	9.1	LOS A	0.3	2.5	0.36	0.74	48.2	
Approach		87	2.0	0.048	5.0	LOS A	0.3	2.5	0.36	0.29	50.0	
All Vehicles		253	2.0	0.080	4.6	NA	0.3	2.5	0.14	0.37	52.3	

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Hilton St (Thurs  
PM+Dev)

Scott Road & Hilton Street  
Existing Thursday afternoon peak hour  
plus development traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>East: Scott Road (East)</b>											
5	T	80	2.0	0.057	0.3	LOS A	0.4	2.7	0.20	0.00	47.4
6	R	20	2.0	0.057	7.1	LOS A	0.4	2.7	0.20	0.82	42.9
Approach		100	2.0	0.057	1.7	LOS A	0.4	2.7	0.20	0.16	46.4
<b>North: Hilton Street</b>											
7	L	5	2.0	0.005	7.5	LOS A	0.0	0.1	0.18	0.58	43.2
Approach		5	2.0	0.005	7.5	LOS A	0.0	0.1	0.18	0.58	43.2
<b>West: Scott Road (West)</b>											
10	L	5	2.0	0.044	6.4	LOS A	0.0	0.0	0.00	0.89	43.3
11	T	80	2.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		85	2.0	0.044	0.4	LOS A	0.0	0.0	0.00	0.05	49.5
All Vehicles		190	2.0	0.057	1.2	NA	0.4	2.7	0.11	0.13	47.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Hilton St (Sat Mid  
+Dev)

Scott Road & Hilton Street  
Existing Saturday midday plus development  
peak hour traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>East: Scott Road (East)</b>											
5	T	175	2.0	0.107	0.8	LOS A	0.8	6.0	0.33	0.00	45.9
6	R	20	2.0	0.108	7.6	LOS A	0.8	6.0	0.33	0.85	42.9
Approach		195	2.0	0.107	1.5	LOS A	0.8	6.0	0.33	0.09	45.6
<b>North: Hilton Street</b>											
7	L	5	2.0	0.005	8.0	LOS A	0.0	0.2	0.27	0.59	42.8
Approach		5	2.0	0.005	8.0	LOS A	0.0	0.2	0.27	0.59	42.8
<b>West: Scott Road (West)</b>											
10	L	5	2.0	0.094	6.4	LOS A	0.0	0.0	0.00	0.91	43.3
11	T	175	2.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		180	2.0	0.094	0.2	LOS A	0.0	0.0	0.00	0.03	49.8
All Vehicles		380	2.0	0.107	0.9	NA	0.8	6.0	0.17	0.06	47.5

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Scott Rd & Locks Lane (Thur  
PM+Dev)

Scott Road & Locks Lane  
Existing Thursday afternoon plus development peak  
traffic flow  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Locks Lane											
1	L	40	2.0	0.059	11.3	LOS A	0.3	1.8	0.49	0.76	45.8
3	R	80	2.0	0.120	14.2	LOS A	0.5	3.9	0.52	0.83	39.2
Approach		120	2.0	0.120	13.2	LOS A	0.5	3.9	0.51	0.80	41.2
East: Scott Road (west)											
4	L	40	2.0	0.268	8.3	LOS A	0.0	0.0	0.00	1.04	49.0
5	T	475	2.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		515	2.0	0.269	0.6	LOS A	0.0	0.0	0.00	0.08	59.0
West: Scott Road (east)											
11	T	870	2.0	0.452	2.6	LOS A	0.0	0.0	0.00	0.23	71.0
12	R	50	2.0	0.062	12.9	LOS A	0.3	2.1	0.51	0.78	53.2
Approach		920	2.0	0.452	3.1	LOS A	0.3	2.1	0.03	0.26	69.7
South West: Locks Lane											
32	R	80	2.0	0.090	14.4	LOS A	0.3	2.0	0.53	0.88	23.7
Approach		80	2.0	0.090	14.4	LOS A	0.3	2.0	0.53	0.88	23.7
All Vehicles		1635	2.0	0.452	3.6	NA	0.5	3.9	0.08	0.27	61.0

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 3 May 2013 9:26:50 AM  
SIDRA INTERSECTION 5.0.5.1510

Project: G:\Traffic\SIDRA 5.0\8441 South Tamworth Masters\Scott Rd & Locks Lane (2).sip  
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SIDRA  
INTERSECTION

# MOVEMENT SUMMARY

Site: Scott Rd & Locks Lane (Sat  
Mid +Dev)

Scott Road & Locks Lane  
Existing Thursday afternoon plus development peak  
traffic flow  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
<b>South: Locks Lane</b>											
1	L	90	2.0	0.186	15.2	LOS B	0.8	5.7	0.65	0.89	45.4
3	R	180	2.0	0.389	19.3	LOS B	2.2	15.6	0.72	0.99	38.7
Approach		270	2.0	0.389	17.9	LOS B	2.2	15.6	0.70	0.96	41.0
<b>East: Scott Road (west)</b>											
4	L	95	2.0	0.403	8.3	LOS A	0.0	0.0	0.00	1.01	49.0
5	T	675	2.0	0.403	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		770	2.0	0.403	1.0	LOS A	0.0	0.0	0.00	0.12	58.4
<b>West: Scott Road (east)</b>											
11	T	650	2.0	0.338	2.6	LOS A	0.0	0.0	0.00	0.23	71.0
12	R	110	2.0	0.206	16.2	LOS B	0.9	6.8	0.68	0.92	49.3
Approach		760	2.0	0.338	4.6	LOS B	0.9	6.8	0.10	0.33	66.8
<b>South West: Locks Lane</b>											
32	R	180	2.0	0.160	7.6	LOS A	0.6	3.8	0.44	0.75	25.9
Approach		180	2.0	0.160	7.6	LOS A	0.6	3.8	0.44	0.75	25.9
All Vehicles		1980	2.0	0.403	5.3	NA	2.2	15.6	0.17	0.37	56.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

Processed: Friday, 3 May 2013 9:27:08 AM

SIDRA INTERSECTION 5.0.5.1510

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INTERSECTION

# MOVEMENT SUMMARY

Site: Locks Lane & Site Entry  
(Thurs PM + Dev)

Locks Lane & Site Access  
Thursday afternoon development peak hour traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Locks Lane (South)											
1	L	90	2.0	0.049	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
Approach		90	2.0	0.049	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
North: Locks Lane (North)											
9	R	20	2.0	0.015	8.8	LOS A	0.1	0.5	0.19	0.64	47.9
Approach		20	2.0	0.015	8.8	LOS A	0.1	0.5	0.19	0.64	47.9
West: Site Entry											
10	L	20	2.0	0.157	8.9	LOS A	0.9	6.6	0.22	0.50	47.9
12	R	120	2.0	0.157	9.2	LOS A	0.9	6.6	0.22	0.65	47.8
Approach		140	2.0	0.157	9.1	LOS A	0.9	6.6	0.22	0.63	47.8
All Vehicles		250	2.0	0.157	8.8	NA	0.9	6.6	0.14	0.65	48.2

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.

# MOVEMENT SUMMARY

Site: Locks Lane & Site Entry (Sat  
Mid + Dev)

Locks Lane & Site Access  
Saturday midday development peak hour traffic  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Locks Lane (South)											
1	L	200	2.0	0.109	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
Approach		200	2.0	0.109	8.2	LOS A	0.0	0.0	0.00	0.67	49.0
North: Locks Lane (North)											
9	R	45	2.0	0.038	9.3	LOS A	0.2	1.3	0.30	0.65	47.5
Approach		45	2.0	0.038	9.3	LOS A	0.2	1.3	0.30	0.65	47.5
West: Site Entry											
10	L	45	2.0	0.388	10.4	LOS A	2.9	20.6	0.44	0.36	46.5
12	R	265	2.0	0.388	10.7	LOS A	2.9	20.6	0.44	0.71	46.4
Approach		310	2.0	0.388	10.6	LOS A	2.9	20.6	0.44	0.66	46.4
All Vehicles		555	2.0	0.388	9.7	NA	2.9	20.6	0.27	0.66	47.4

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Movement): LOS A. LOS Method for individual vehicle movements: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any vehicle movement.