

CHAPTER 8

ROAD MARKINGS & SIGNS

DRAWING TITLE	DRAWING NO.	REVISION
LANE MARKINGS (SHEET 1 OF 3)	LTA/SDRE14/8/RMS1	B
LANE MARKINGS (SHEET 2 OF 3)	LTA/SDRE14/8/RMS2	B
LANE MARKINGS (SHEET 3 OF 3)	LTA/SDRE14/8/RMS3	A
ARROW MARKINGS	LTA/SDRE14/8/RMS4	A
MULTI-HEAD ARROW FOR TURNING MOVEMENTS	LTA/SDRE14/8/RMS5	A
TYPICAL ACCELERATION LANE AT EXPRESSWAY	LTA/SDRE14/8/RMS6	A
TYPICAL DECELERATION LANE AT EXPRESSWAY	LTA/SDRE14/8/RMS7	A
CHEVRON MARKINGS	LTA/SDRE14/8/RMS8	A
ROAD SIGNS & MARKINGS AT INTERSECTIONS	LTA/SDRE14/8/RMS9	B
BUS LANE MARKINGS	LTA/SDRE14/8/RMS10	B
MANDATORY GIVE WAY TO BUS (MGWTB)	LTA/SDRE14/8/RMS11	-
PAVEMENT MARKINGS FOR SHARP CURVE	LTA/SDRE14/8/RMS12	A
CURVE ALIGNMENT MARKERS (CAM)	LTA/SDRE14/8/RMS13	-
GUIDING LINES AND TURNING POCKETS AT INTERSECTIONS	LTA/SDRE14/8/RMS14	A

TYPE	MARKINGS	DESCRIPTION	THICKNESS OF THERMOPLASTIC PAINT (mm)
A		These white lines are used to indicate the edge of the carriageway adjacent to auxillary lanes eg. exclusive right / left turn lanes at junctions, lay-by, bus bay, guidling lines etc.	3.0
A1		These yellow lines are used along normal bus lanes to indicate a break for use by other turning vehicles.	1.5
A2		These white lines are used to indicate the edge of the carriageway adjacent to auxillary lanes eg. exclusive right/left turn lanes at acceleration / deceleration lanes along expressways. It is also known as speed change lane marking.	3.0
A3		These broken yellow lines are used to guide drivers emerging from the side road to keep away from the leftmost traffic lane, which is a normal bus lane. It gives the road users advance warning and provides clearer guidance to motorists of normal bus lane ahead.	1.5
A4		These broken white lines are used to demarcate signalised pedestrian crossing lines.	5
A5		These broken white lines are used for guiding motorists across junctions.	3.0
A6		These yellow and red lines are used along full day bus lane to indicate a break for use by other turning vehicles.	1.5 (Yellow Line) 1.5 (Red Line)
A7		These broken yellow and red lines are used to guide drivers emerging from the side road, to keep away from the left-most traffic lane, which is a full day bus lane. It gives the road users advance warning and provides clearer guidance to motorists of full day bus lane ahead.	1.5 (Yellow Line) 1.5 (Red Line)
A8		These broken white lines are used to demarcate signalised bicycle crossing lines.	3.0
B		These white lines are used as lane marking between lanes at other roads & tunnels.	3.0
B1		These white lines are used as lane marking between lanes on expressway only.	3.0
C		These white lines are used as lane markings at light controlled intersection and along the approaches at / before the stop line. Generally 7 to 10 markings are painted.	3.0

NOTES:

1. Single / double yellow lines are not required under the following situations:

- flyover and underpass

- ramps leasng to flyover and underpass

- slip road (both sides)

- edge of traffic island (forming the slip road) at road intersection

2. Thermoplastic road marking materials shall comply with SS 589:2013.

3. The dimensioning lane width shall be taken from the centre of lane markings. See diagram A

STANDARD

DETAIL

LANE MARKINGS

(SHEET 1 OF 3)

B

SEP 2017

A

OCT 2015

REV.

DATE

DRAWING NO.

LTA/SDRE14/8/RMS1

REV.

B

DATE OF ISSUE

1st APR 2014

SCALE

1:100

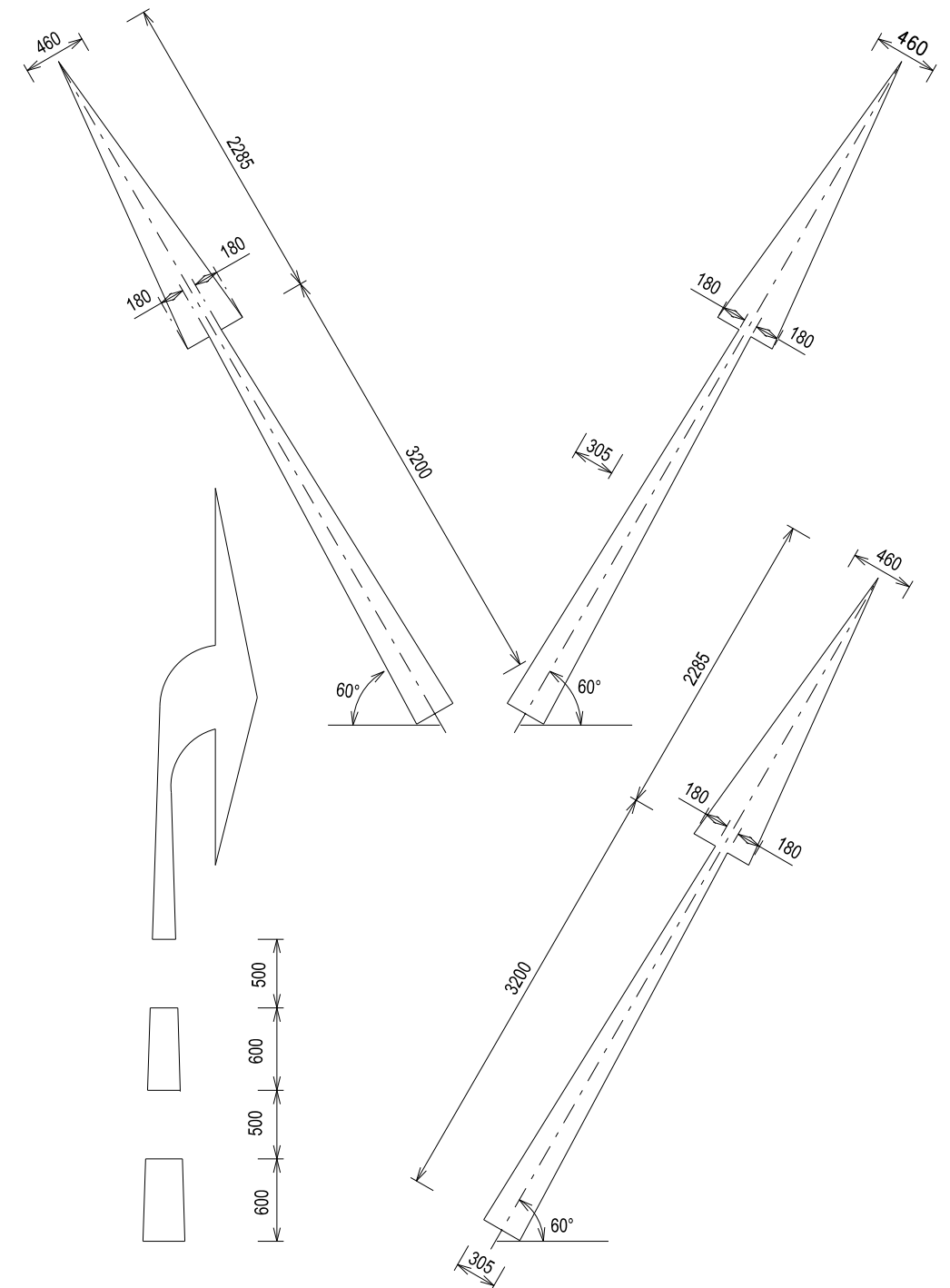
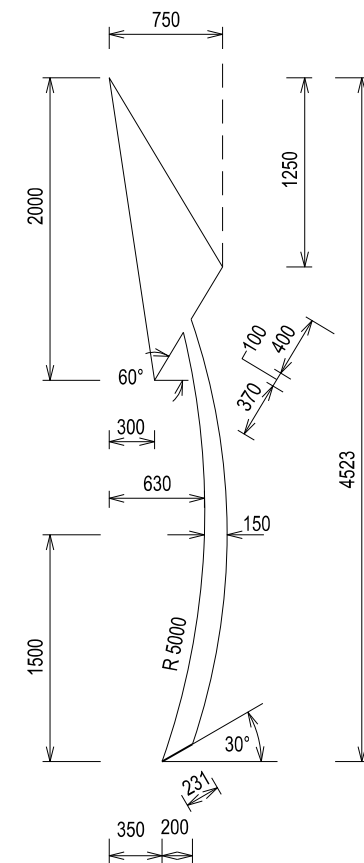
SHEET NO.

1 OF 3

TYPE	MARKINGS	DESCRIPTION	THICKNESS OF THERMOPLASTIC PAINT (mm)
O		Single zig zag yellow line at the edge of a road prohibiting parking at all times.	1.5
P		Double zig zag yellow line at the edge of a road prohibiting stopping of vehicles at all times unless the vehicle is prevented from proceeding due to traffic conditions.	1.5
Q		These continuous yellow & red lines are used as full day bus lane marking.	1.5 (Yellow Line) 1.5 (Red Line)
R		Raised profile marking to be provided for the following: - From the start of the shoulder marking at the exit road to 10m behind the gore area - From the start of chevron to 10m after the gore area - From the start of the deceleration lane along expressway next to paved shoulder - Continuously along the expressway shoulder lane next to slow lane	

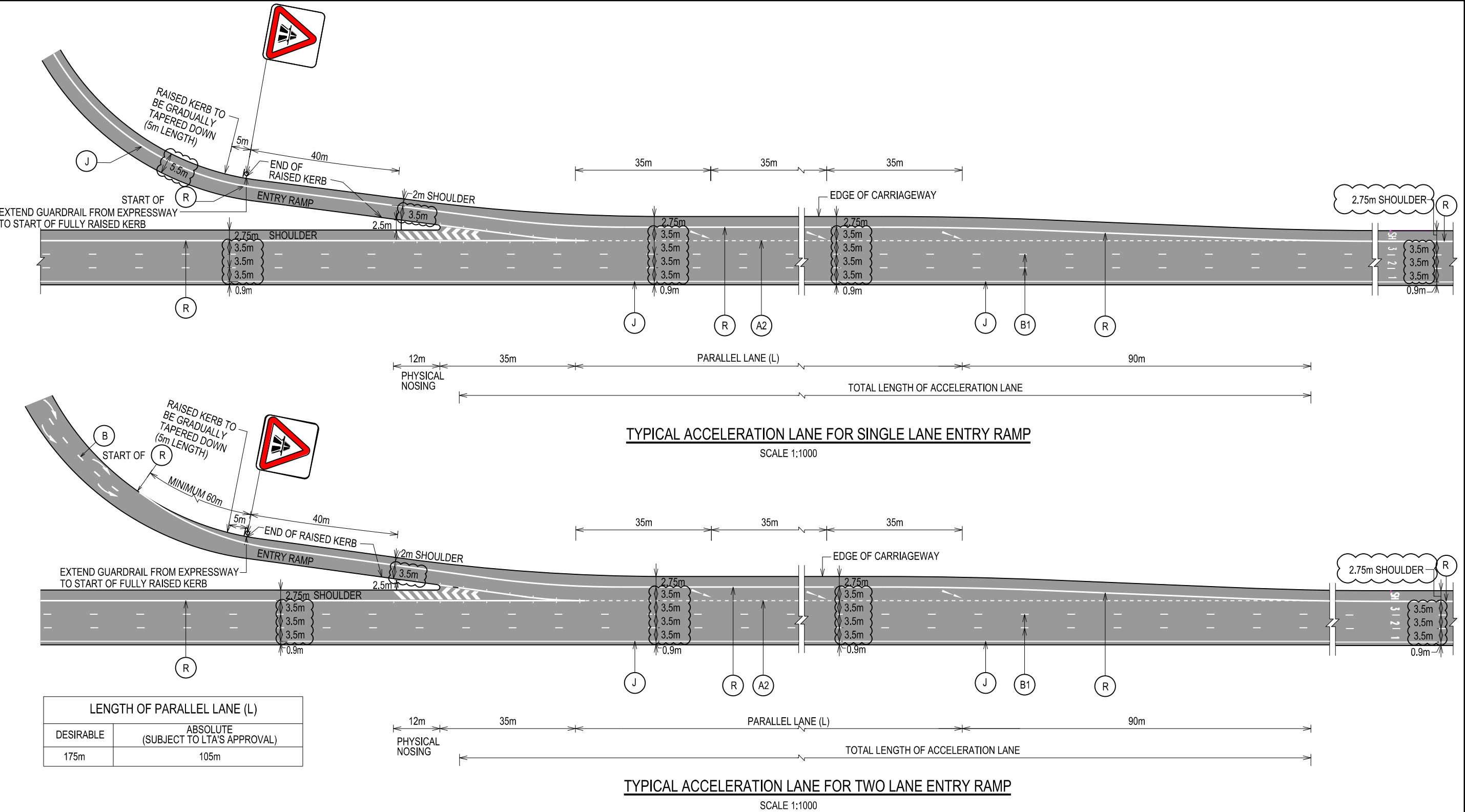
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STANDARD DETAIL		Land Transport Authority	
LANE MARKINGS (SHEET 3 OF 3)		DRAWING NO. LTA/SDRE14/8/RMS3	REV. A
A OCT 2015		DATE OF ISSUE 1st APR 2014	SHEET NO. 3 OF 3
REV. DATE		SCALE AS SHOWN	



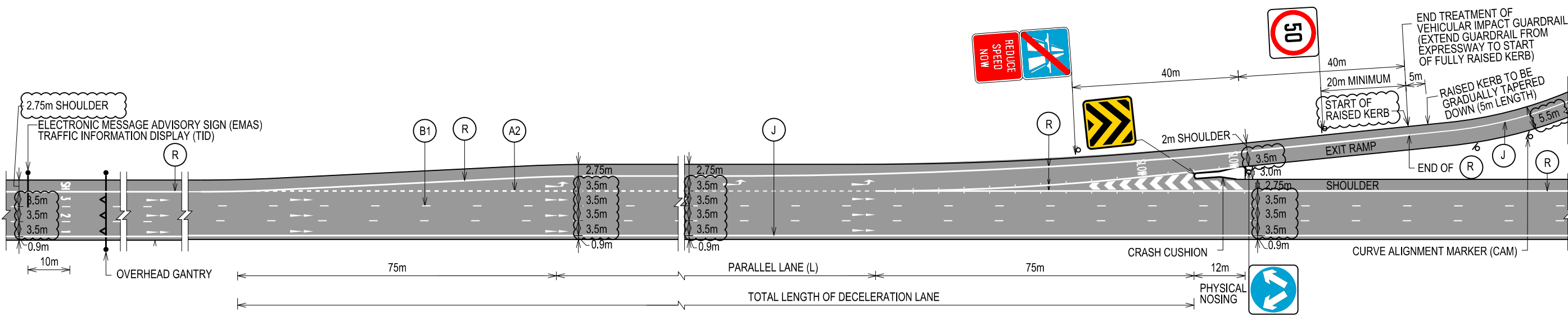
TO INDICATE CERTAIN
TRAFFIC MOVEMENT
WITH TIME LIMIT

SHEET NO.
1 OF 1

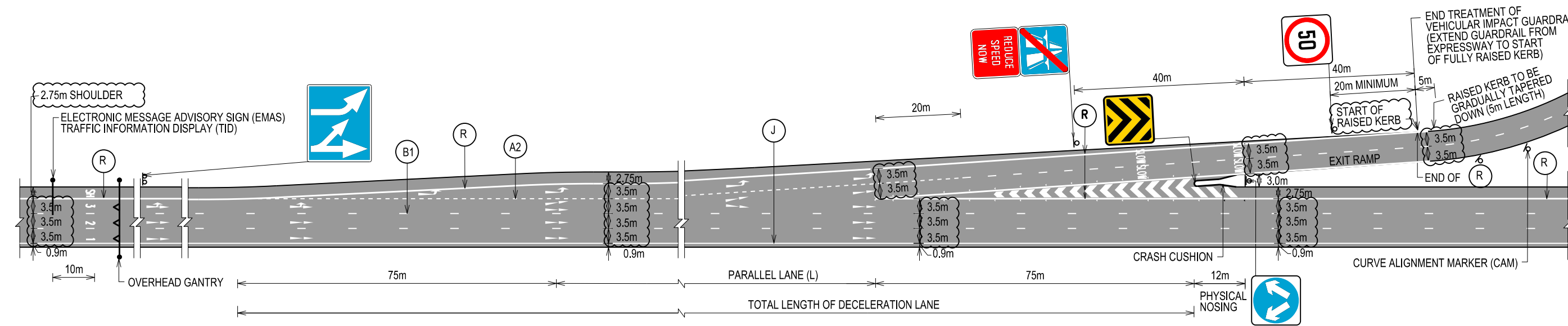


NOTES:
1. Appropriate width of the slip road shall be provided based on the various radii of the slip road, in accordance to Civil Design Criteria.

REV.	A	SEP 2017	DATE	STANDARD DETAIL	TYPICAL ACCELERATION LANE AT EXPRESSWAY	Land Transport Authority		
						DRAWING NO. LTA/SDRE14/8/RMS6		
						REV. A		
						DATE OF ISSUE 1st APR 2014	SCALE AS SHOWN	SHEET NO. 1 of 2



TYPICAL DECELERATION LANE AT EXIT FOR SINGLE LANE EXIT RAMP



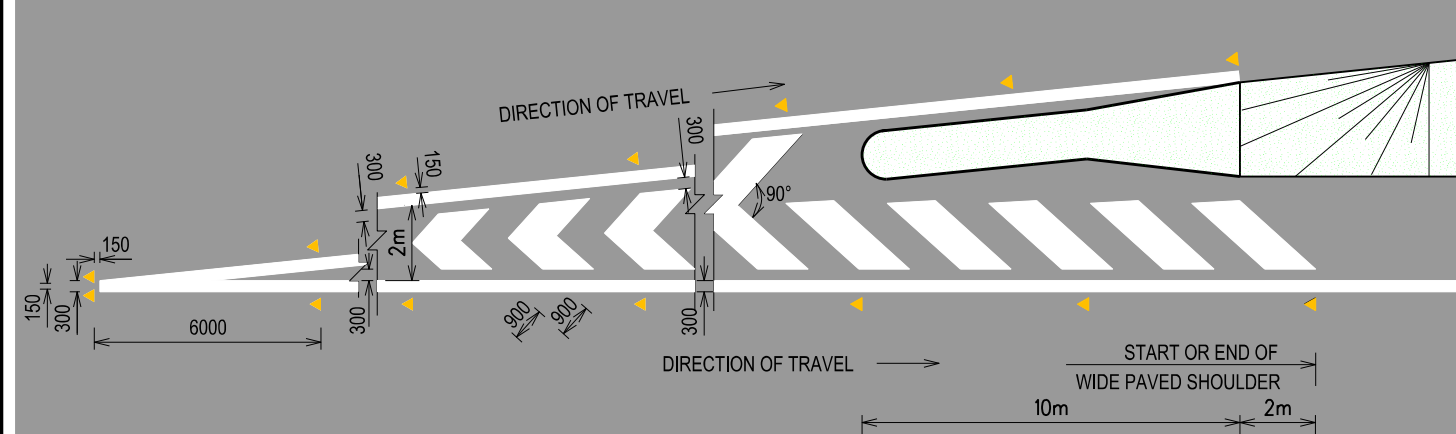
TYPICAL DECELERATION LANE AT EXIT FOR TWO LANE EXIT RAMP

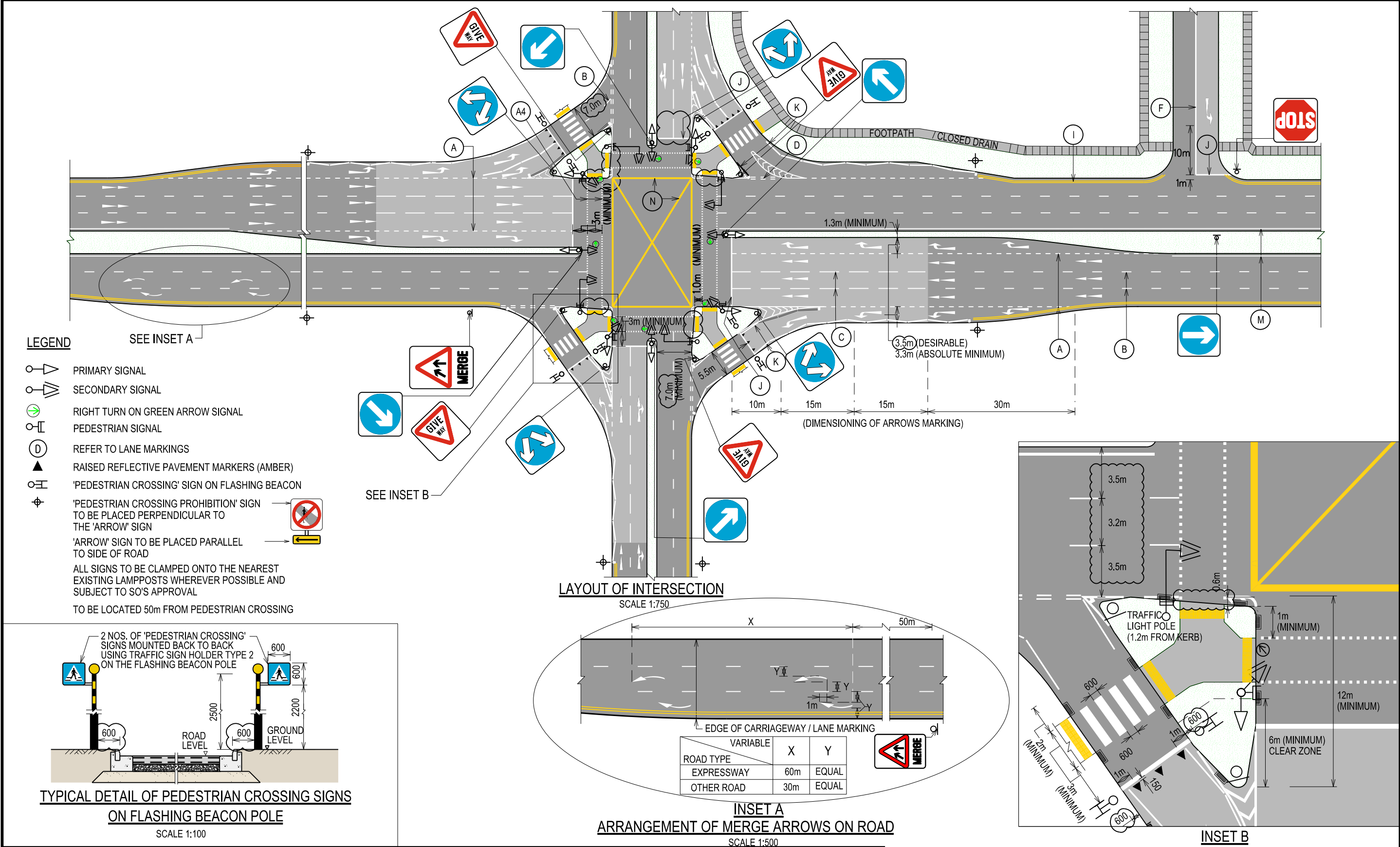
LENGTH OF PARALLEL LANE (L)		
DESIRABLE	MINIMUM	ABSOLUTE (SUBJECT TO LTA'S APPROVAL)
150m	80m	10m

NOTES:

- Area between the slip road and main road behind the nosing shall be graded level with carriageway and shall be free of signs, trees, lamp posts and other hard objects except split arrows and object marker sign.
- Total length of the deceleration lane can be further reduced to absolute minimum value of 160m due to site constraint subject to approval by LTA.
- Appropriate width of the slip road shall be provided based on the various radii of slip road, in accordance to Civil Design Criteria.

A REV.	SEP 2017 DATE	STANDARD DETAIL TYPICAL DECELERATION LANE AT EXPRESSWAY	Land Transport Authority		
			DRAWING NO. LTA/SDRE14/8/RMS7		REV. A
			DATE OF ISSUE 1st APR 2014	SCALE 1:1000	SHEET NO. 2 of 2





NOTES:

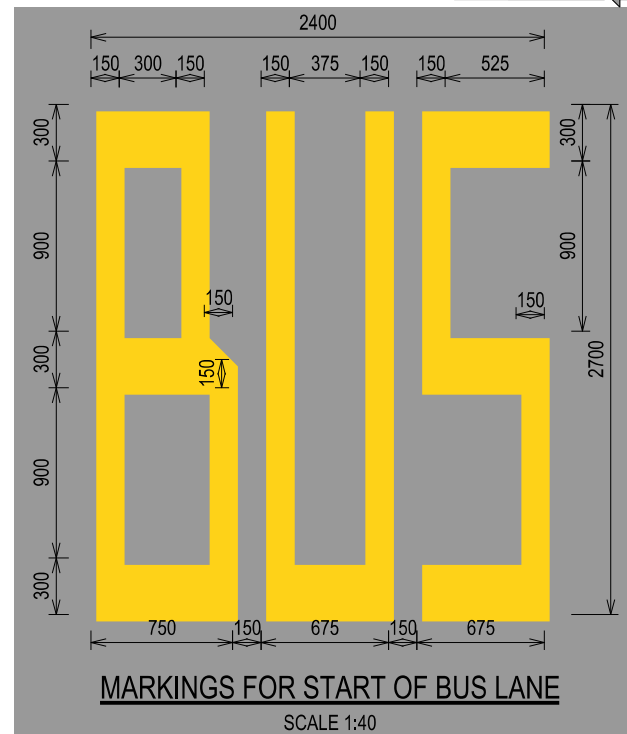
- For pedestrian crossing with green and red man aspect, crossing is to be painted white.
- For pedestrian crossing without green and red man aspect, crossing is to be painted yellow.
- However, where site condition necessitates it, the stop line can be more than a metre from the mouth of the junction.
- If the width of centre median does not permit the erection of 'Keep Left' sign, spring-loaded delineator post shall be used.
- The zig zag markings must not overlap existing double yellow lines.

- The zig zag markings shall be 350mm away from the road kerb.
- The 'Pedestrian Crossing' sign shall face the oncoming traffic and erect away from the road kerb.
- The 'Pedestrian Crossing' sign is to be erected on existing lamppost / traffic light pole / any sign pole that is located less than 1m away from the flashing beacon pole.
- There shall be no additional loading on the flashing beacon pole other than 'Pedestrian Crossing' signs.
- Thickness of thermoplastic paint for zebra crossing marking is 3mm.
- Appropriate width of the slip road shall be provided based on the various radii of slip road, in accordance to civil design criteria.

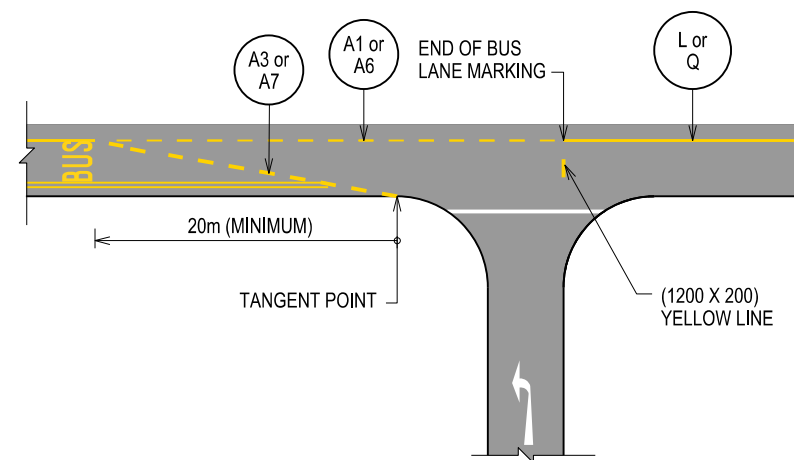
STANDARD DETAIL	
ROAD SIGNS & MARKINGS AT INTERSECTIONS	
B	SEP 2017
A	OCT 2015
REV.	DATE

DRAWING NO. LTA/SDRE14/8/RMS9		REV. B
DATE OF ISSUE 1st APR 2014	SCALE AS SHOWN	SHEET NO. 1 OF 1

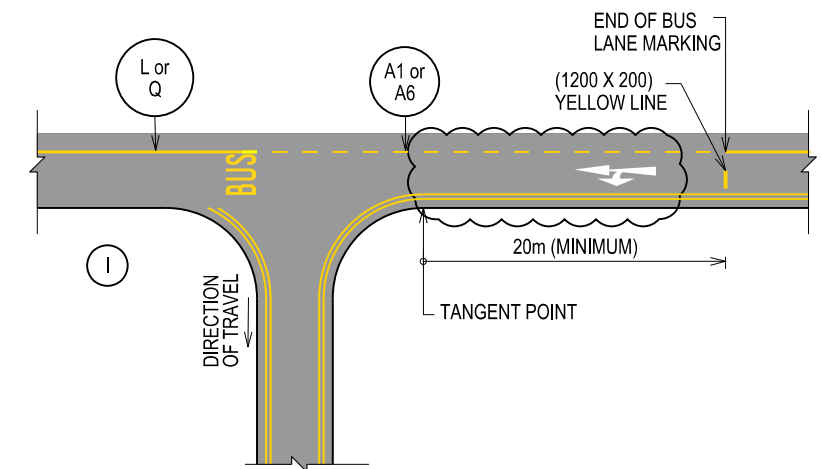
Land Transport Authority



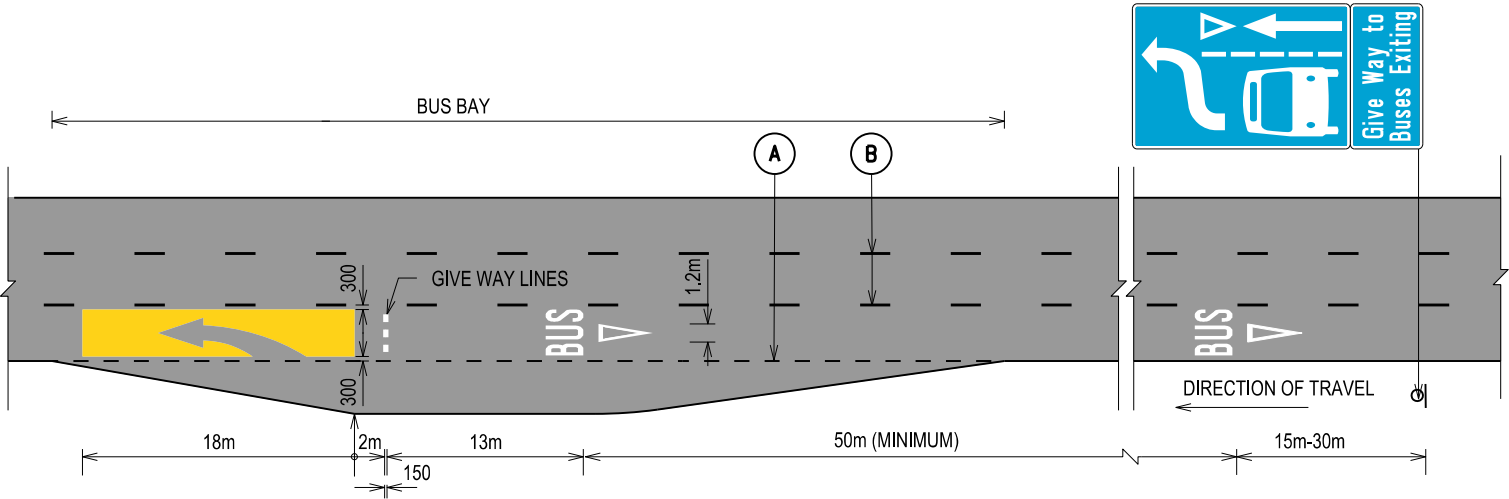
SCALE 1:500



SCALE 1:500

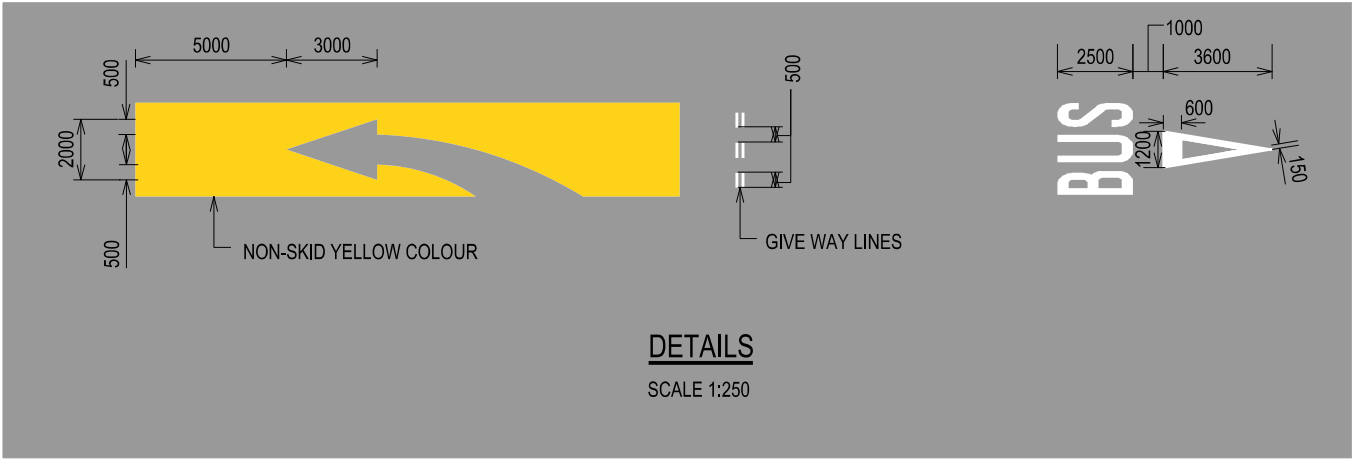


		STANDARD	DETAIL	<div>Land Transport Authority</div>		
B	SEP 2017	BUS LANE MARKINGS	DRAWING NO.		REV.	
A	OCT 2015		LTA/SDRE14/8/RMS10		B	
REV.	DATE		DATE OF ISSUE	SCALE	SHEET NO.	
			1st APR 2014	AS SHOWN	1 OF 1	



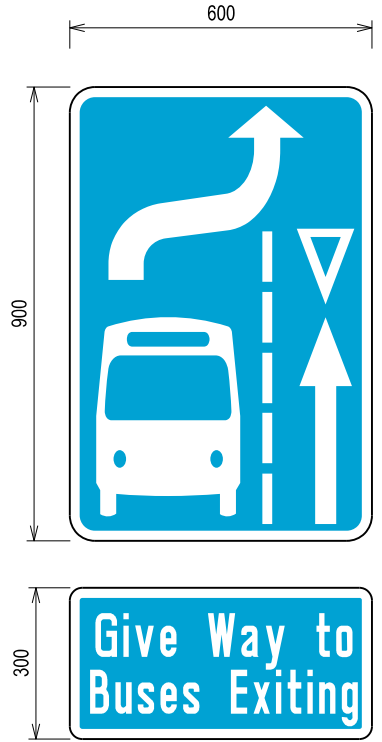
MANDATORY GIVE WAY TO BUS

SCALE 1:500



DETAILS

SCALE 1:250



'MANDATORY GIVE WAY TO BUS' SIGN

SCALE 1:15

NOTES:

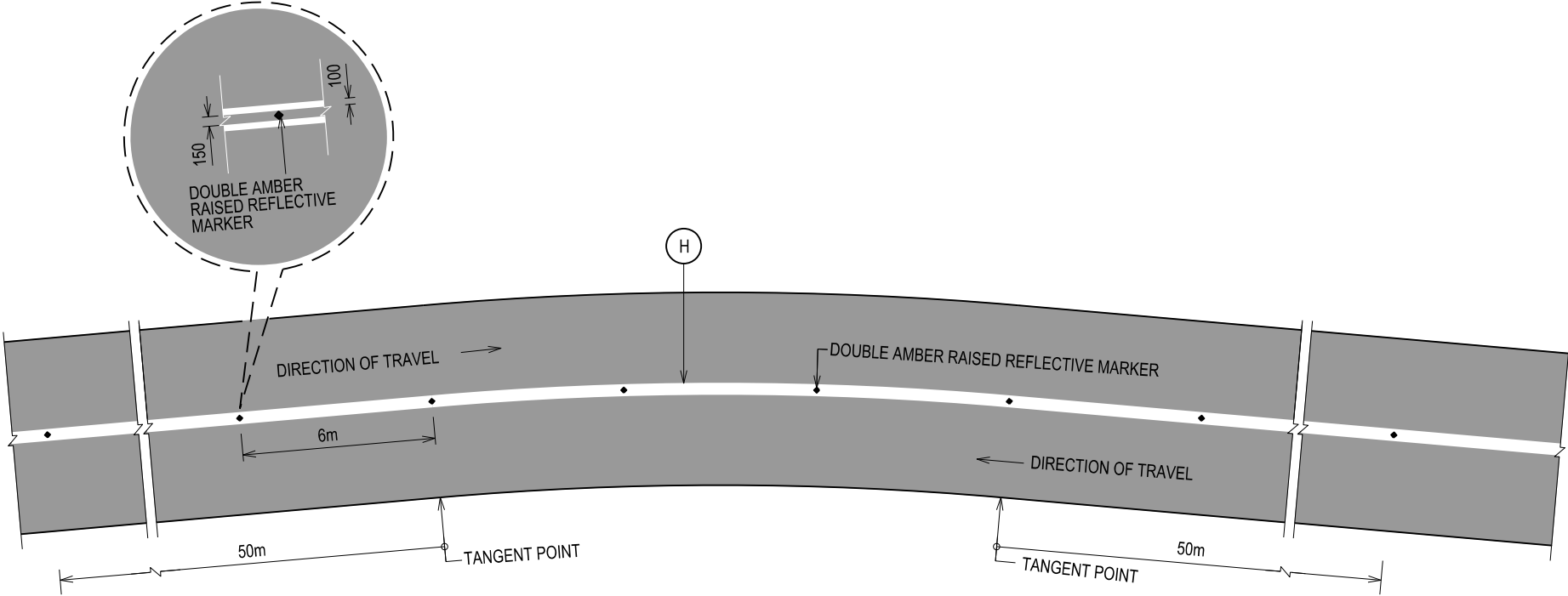
1. Colour code for the Bus Zone shall be of "BS 381C 355 LEMON" or equivalent for the section to be coated with yellow.

STANDARD		DETAIL	
REV.		MANDATORY GIVE WAY TO BUS (MGWTB)	
		Land Transport Authority	
		DRAWING NO. LTA/SDRE14/8/RMS11	
		REV. -	
		DATE OF ISSUE 1st APR 2014	SHEET NO. 1 OF 1
		SCALE AS SHOWN	

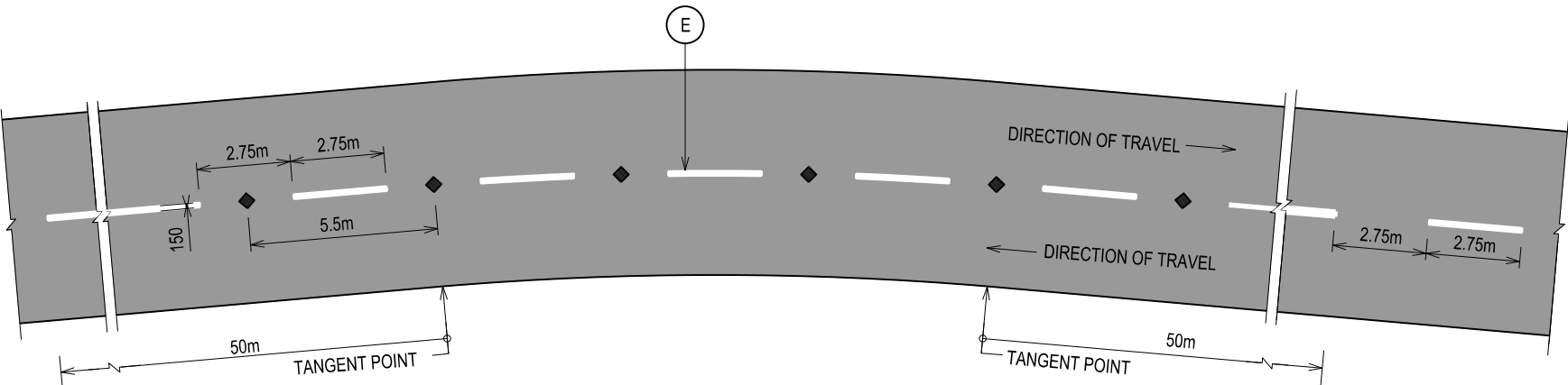
LEGEND

- D

REFER TO LANE MARKINGS
- DOUBLE AMBER RAISED REFLECTIVE PAVEMENT MARKERS



RAISED REFLECTIVE PAVEMENT MARKERS AT SHARP CURVE (AT 6m INTERVAL)
SCALE 1:200



RAISED REFLECTIVE PAVEMENT MARKERS AT SHARP CURVE (AT 5.5m INTERVAL)
SCALE 1:200

NOTES:

1. The raised reflective pavement markers shall comply with BS 8442:2006, BS EN 12899-1:2007, BS EN 1463-1:2009.
2. Sharp curve refers to radius equal to or less than 200m.


		STANDARD DETAIL	PAVEMENT MARKINGS FOR SHARP CURVE	Land Transport  Authority		
				DRAWING NO. LTA/SDRE14/8/RMS12		REV. A
				DATE OF ISSUE 1st APR 2014	SCALE AS SHOWN	SHEET NO. 1 OF 1
A	OCT 2015					
REV.	DATE					

TABLE 1:
SIZE OF CURVE ALIGNMENT MARKER (CAM)

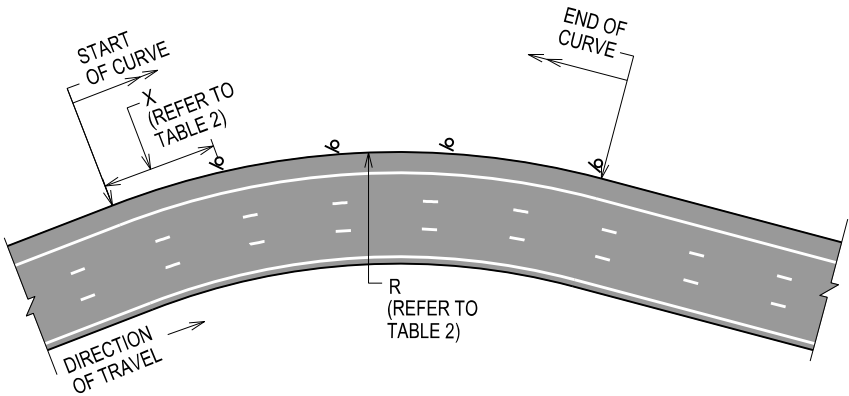
CLASS OF ROAD	SIZE OF CAM	REMARKS
EXPRESSWAY	750 X 900	HEIGHT CLEARANCE OF THE CURVE ALIGNMENT MARKER SHALL NOT BE MORE THAN 1.2m FROM THE GROUND TO THE BOTTOM OF THE MARKER. IF CURVE ALIGNMENT MARKER MOUNTED ON VIADUCT, HEIGHT CLEARANCE OF THE CURVE ALIGNMENT MARKER SHALL BE 1.5m.
OTHER ROAD	600 X 750	

TABLE 2:
SPACING OF CURVE ALIGNMENT MARKER (CAM) FOR EXPRESSWAY

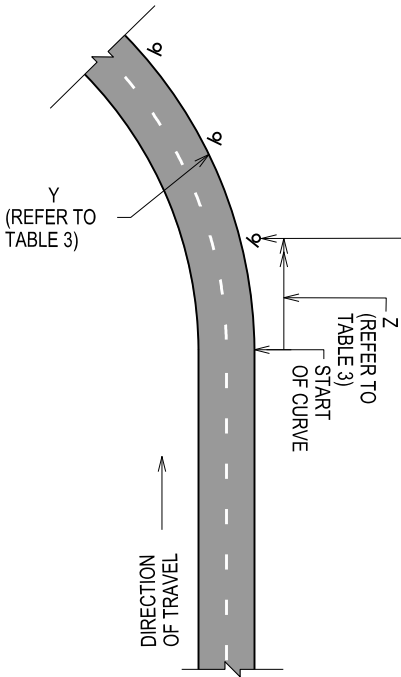
RADIUS OF CURVE - R (m)	SPACING OF CURVE ALIGNMENT MARKERS - X (m)
45	9
60	11
75	12
90	15
120	17
150	20
180	21
210	23
240	24
270	26
300	27

TABLE 3:
SPACING OF CURVE ALIGNMENT MARKER (CAM) FOR OTHER ROAD

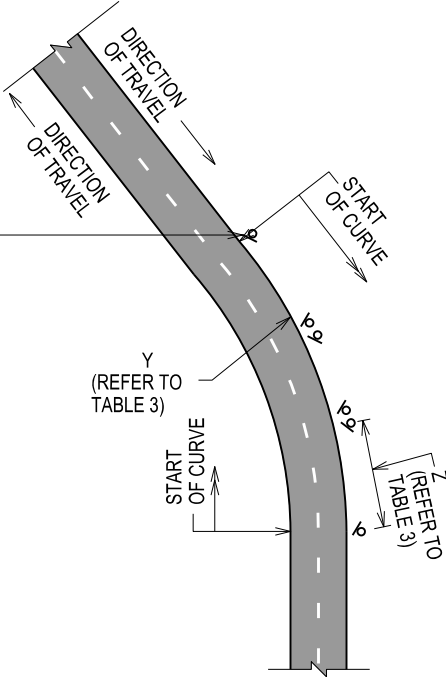
RADIUS OF CURVE - Y (m)	SPACING OF CURVE ALIGNMENT MARKERS - Z (m)
< 50	14
50 - 100	16
101 - 150	24
> 150	32



CURVE ALIGNMENT MARKER FOR EXPRESSWAY



TYPICAL HORIZONTAL CURVE (ONE WAY)



TYPICAL HORIZONTAL CURVE (TWO WAY)

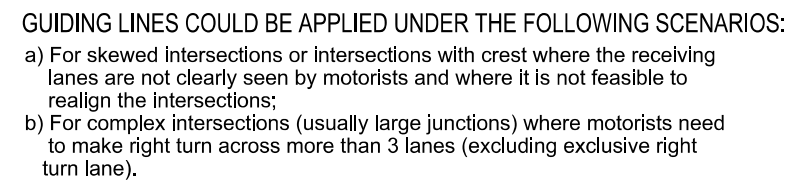
CURVE ALIGNMENT MARKER FOR OTHER ROAD

NOTES:

1. The first CAM shall be placed at a distance of one spacing after the start of the curve for all roads.
2. Last CAM shall be placed at the end of the curve with intermediate CAM equally placed.
3. CAM are mandatory for curves with radius less than
 - a) 95m for roads of posted speed limit of 70km/h.
 - b) 60m for roads of posted speed limit of 60km/h.CAM may be installed for larger radius curve at the discretion of the authority.

4. Minimum three CAM are to be installed at each approach.

STANDARD DETAIL		Land Transport Authority		
CURVE ALIGNMENT MARKERS (CAM)		DRAWING NO. LTA/SDRE14/8/RMS13		REV. -
		DATE OF ISSUE 1st APR 2014	SCALE 1:1000	SHEET NO. 1 of 1
		REV.	DATE	



The diagram illustrates a T-junction with the following features:

- Vertical Road:** Features a yellow center line and dashed lane markings. Dimensions of 2m are shown for the width of the central lane and the offset from the center line to the edge of the road.
- Horizontal Road:** Crosses the vertical road. It has dashed lane markings and a yellow center line. Dimensions of 2m are shown for the width of the central lane and the offset from the center line to the edge of the road.
- Dimensions:** Multiple 2m dimensions are indicated for lane widths and offsets.
- Labels:**
 - A:** Located at the top and bottom of the vertical road.
 - B:** Located on the right side of the horizontal road.
 - C:** Located on the right side of the vertical road.
 - A4:** Located on the right side of the vertical road.
 - J:** Located on the right side of the vertical road.
- Minimum Width:** A dashed line indicates a 2m minimum width for a specific lane.

1. Use 1m mark by 3m gap (A5) for straight guiding lines and 1m mark by 1m gap (A) for curve guiding lines.
2. Guiding lines shall not recommended to be applied directly next to the pedestrian crossing lines where not possible, pedestrian crossing lines and or stop line may need to be offset (at least one lane width) from guiding line.
3. Guiding lines shall not intersect with existing turning pocket and shall not be drawn within turning pocket.

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| A | OCT 2015 |
| REV. | DATE |

GUIDING LINES AND TURNING POCKETS AT INTERSECTIONS

DRAWING NO.		REV.
LTA/SDRE14/8/RMS14		A
DATE OF ISSUE	SCALE	SHEET NO.
1st APR 2014	AS SHOWN	1 OF 1