

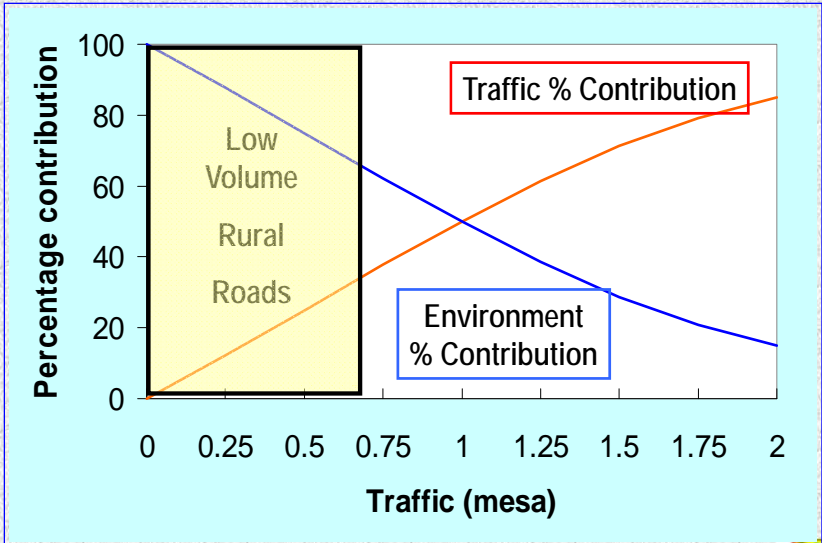
SEACAP 003

LVRR Standards and Specification Geometric Design

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Contributions to Road Deterioration

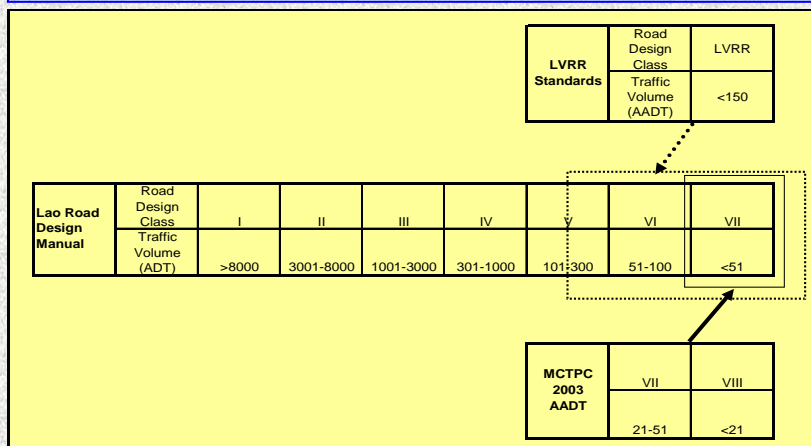


LVRR Classification

Design Parameter	Description	Definition	
Road system	Low volume rural roads	For all-year accessibility	
Classification	One-lane roads. Defined by maximum number of 4-wheeled motorized vehicles, maximum axle load and maximum vehicle body width	Traffic lane	One
		Maximum 4-wheeled motorized vehicles	150 per day
		Maximum axle load limit	4.5Tonnes for any vehicle
		Maximum vehicle body width	2.3m



LVRR Classification in relation with existing documents



The basic for the LVRR classification

Upper limit for LVRR traffic:

- 150 motorised 4-wheeled vehicles per day

Upper axle load limit:

- 4.5 tonnes

Upper vehicle width:

- 2.3 meters



Geometric Design

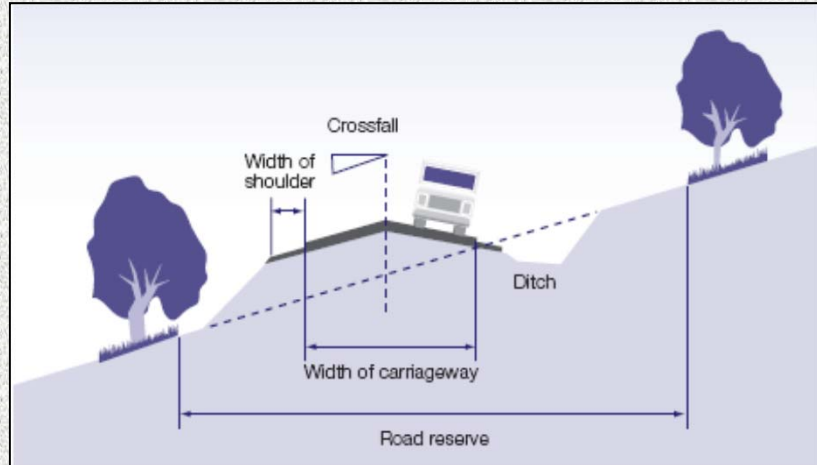
Geometric design is the process whereby the layout of the road is designed to meet the needs of the road users. (ORN 6)

To provide:

- Minimum acceptable level of safety – eg sight distance
- Economic design
- Consistency of alignment
- Design speed
- Terrain
- Traffic volume
- Cross section – widening
- Gradient
- Curvature – super-elevation – H & V curvature



Key elements of a road cross section



LVRR Geometric Standards

Design Parameter	Comment	Definition		
Design speed	Defined by Terrain	Design speed for Terrain:		
		Flat Rolling	Rolling	Mountainous
		50km/h	40km/h	30km/h
Carriageway	Defined by vehicle body widths and number of non-motorized road users	Minimum 2.5m, Maximum 3.5m (See Table 4 for selection)		
Shoulder		Minimum 1m, Maximum 1.5m each side of road (See Table 4 for selection)		
Maximum gradient	Defined by terrain with a limit of 6% for gravel surfacing	Flat	Rolling	Mountainous
		6 %	8 %	10 % ¹
Cross fall	Defined by surfacing type	Gravel	6 % ²	
		Sealed	4 %	



LVRR Geometric Standards

Design Parameter	Comment	Definition			
Stopping sight distance	Defined by design speed and surfacing type		Meeting sight distance, design speeds:		
			50km/h	40km/h	30km/h
		Gravel	130m	100m	60m
		Sealed	100m	70m	50m
Minimum horizontal curve radius	Defined by design speed and surfacing type for single lane road.		Horizontal curves, for design speeds:		
			50km/h	40km/h	30km/h
		Gravel	110m	70m	40m
		Sealed	95m	60m	35m
Minimum vertical curve radius	Defined by design speed for either crest or sag curves and by surfacing type		Vertical crest curves, for design speeds:		
			50km/h	40km/h	30km/h
		Gravel	1528m	890m	370m
		Sealed	1025m	520m	270m
			Vertical sag curves, for design speeds:		
			50km/h	40km/h	30km/h
	Gravel or Sealed	390m	250m	140m	



Criteria for selecting road widths

Criteria	Decision (Shoulder + Carriageway + Shoulder)
If maximum vehicle width > 2.3m	Use Lao Road Design Manual
If maximum plated axle weight > 4.5T	Use Lao Road Design Manual
If total 4-wheeled traffic AADT > 150	Use Lao Road Design Manual
If maximum vehicle width > 1.8m and <2.3m	Use 1m+3.5m+1m, total 5.5m road width
If maximum vehicle width <1.8m and total AADT of non-motorized road users is <150	Use 1m+2.5m+1m total 4.5m road width
If maximum vehicle width <1.8m and total AADT of non-motorized road users is >150	Use 1.5m+2.5m+1.5m total 5.5m road width



Thank You

