

SKILLS TRANSFER TRAINING PROGRAMME

SARF
better roads

**ROAD TRAFFIC SIGNS/ MARKINGS AND
SAFETY CONTROL DEVICE
ASSESSMENT/AUDIT IN COMPLIANCE WITH
SADC ROAD TRAFFIC SIGNS MANUAL AND
COTO STANDARD SPECIFICATIONS**




Presented by
André Fabricius Pr Tech Eng
anfabconsult@gmail.com


AnFab Consult (Pty)Ltd
Sign Design, Training & Verification

 AnFab Consult Copyright Reserved **1**


COURSE CONTENTS




- ☐ **MODULE 1** (slides 26-49)
Legislation
- ☐ **MODULE 2** (slides 50-62)
Liability and Risk Analysis
- ☐ **MODULE 3** (slides 63-349)
Road Traffic Signs Assessment
- ☐ **MODULE 4** (slides 350-389)
Traffic Signal Assessment

 AnFab Consult Copyright Reserved **2**


COURSE CONTENTS




- ☐ **MODULE 5** (slides 590-525)
Road Traffic Marking
- ☐ **MODULE 6** (slides 526-568)
W-Section Guardrails
- ☐ **MODULE 7** (slides 569-579)
Fencing
- ☐ **MODULE 8** (slides 580-595)
Road Surface

 AnFab Consult Copyright Reserved **3**

COURSE CONTENTS



- ☐ **MODULE 9** (slides 596-610)
Risk Assessment and Mitigation Measures
- ☐ **MODULE 10** (slides 611-630)
Maintenance Management Systems
- ☐ **MODULE 11** (slides 631-643)
Record Keeping
- ☐ **MODULE 12** (slides 644-681)
Vehicle Crash Data Collection

 AnFab Consult Copyright Reserved **4**

INTRODUCTION



Why Safer Roads?

- Design and check for Safety!

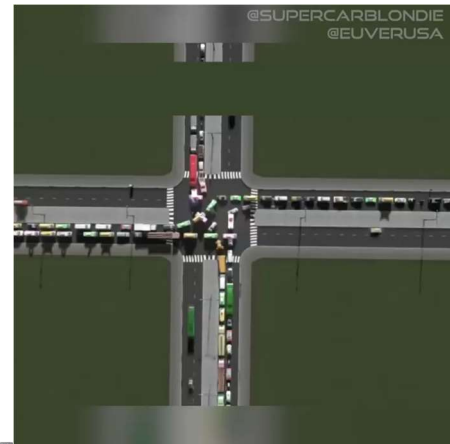
Road Crashes – 90% Driver Error

Don't let it be YOUR fault!



AnFab Consult Copyright Reserved

5



@SUPERCARBLONDIE
@EUVERUSA



AnFab Consult Copyright Reserved

6

Husband: how was your drive back home?

Wife: It was fine, I missed the main exit but I could manage.



AnFab Consult Copyright Reserved

8



INTRODUCTION



- Regular site assessment essential to defend yourself in the case of tort liability claims.

• **KEEP DAILY RECORDS**



AnFab Consult Copyright Reserved

11

INTRODUCTION

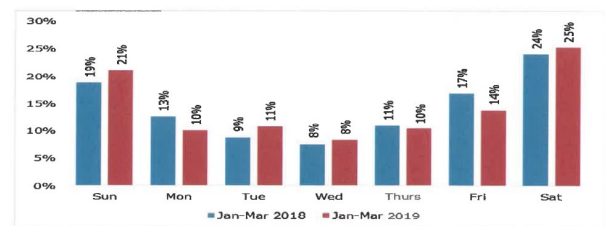


Figure 2: Percentage distribution of fatal crashes per day of week



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

12

INTRODUCTION

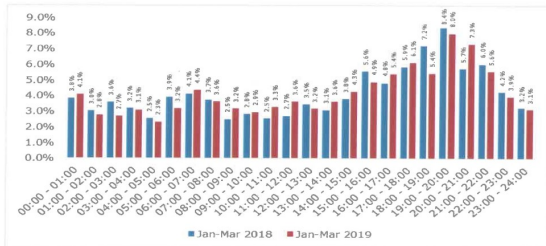


Figure 3: Percentage distribution of fatal crashes per time of day for two quarters 2018 and 2019



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

13

INTRODUCTION

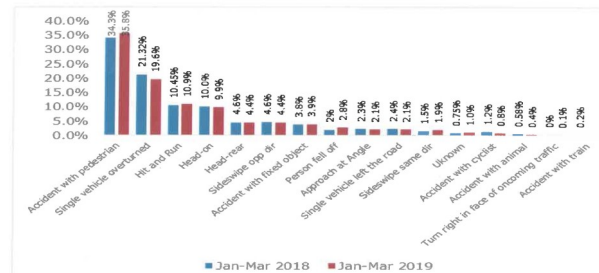


Figure 4: Percentage distribution of fatal crashes per crash type



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

14

INTRODUCTION

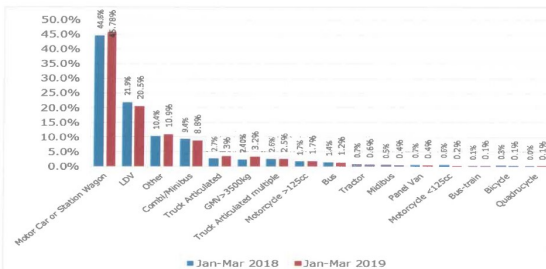


Figure 5: Percentage distribution of fatal crashes per vehicle type



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

15

INTRODUCTION

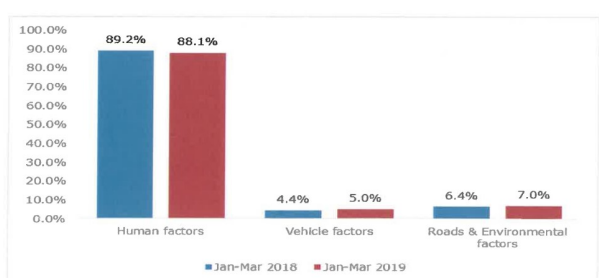


Figure 6: Comparison of contributory factors for 2018 and 2019



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

16

INTRODUCTION

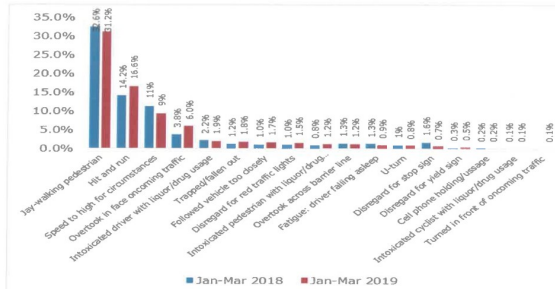


Figure 7: Percentage distribution of human factors



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

17

INTRODUCTION

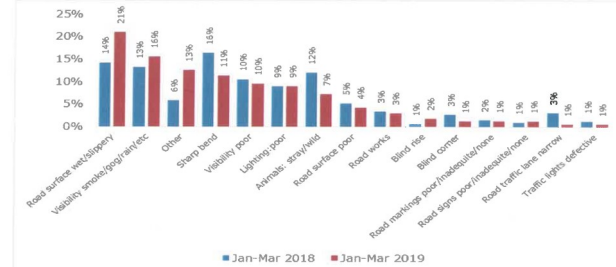


Figure 8: Percentage distribution of road and environmental factors



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

18

INTRODUCTION

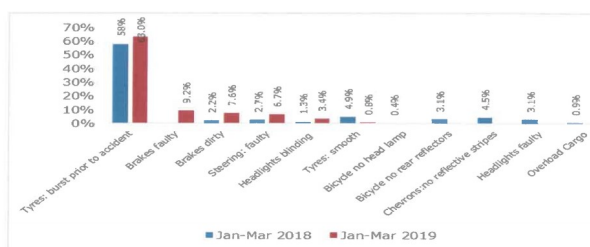


Figure 9: Percentage distribution for vehicle factor



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

19

INTRODUCTION

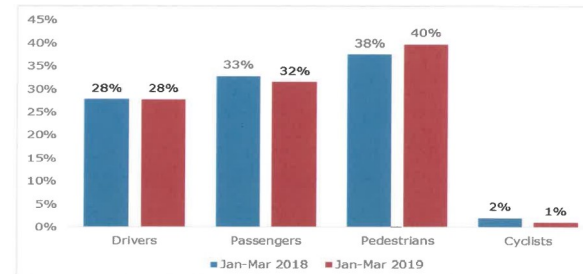


Figure 11: Percentage distribution of fatalities per road user



Road Crash Statistics 2018/19

AnFab Consult Copyright Reserved

20

INTRODUCTION



Figure 14: Percentage distribution of fatalities per age for drivers

Road Crash Statistics 2018/19



AnFab Consult Copyright Reserved

21

INTRODUCTION

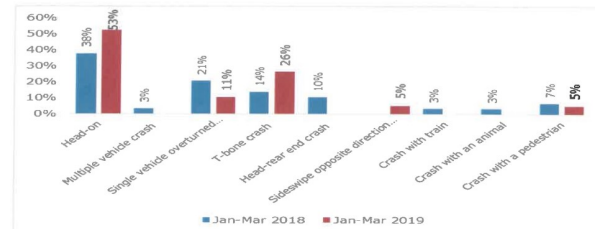


Figure 19: Crash types for major crashes

Road Crash Statistics 2018/19



AnFab Consult Copyright Reserved

22

INTRODUCTION



Road Safety – Proper Maintenance



AnFab Consult Copyright Reserved

23

INTRODUCTION



Road Crashes can be AVOIDED



AnFab Consult Copyright Reserved

24

LEARNING OBJECTIVES

- ✓ Learn how to identify and compile an inventory of safety control devices
- ✓ Learn how to assess safety control devices in compliance with legislation, SADC Road Traffic Signs Manual, SARTSM and COTO standard specifications and compile a risk analysis
- ✓ Learn how to compile a an estimate for maintenance execution
- ✓ Learn how to prioritize and compile mitigation measure instructions
- ✓ Gain a clear understanding of methods to identify dangerous roadside hazards and understand how to choose the correct option to correct the situation
- ✓ Understand the issues facing pedestrian, bicyclist, motorcyclist, public transport and non-motorized vehicle safety
- ✓ Learn how to compile an assessment form and to collect data for possible future tort and or criminal liability claims
- ✓ Learn the difference between public liability and professional indemnity.
- ✓ Learn how to create a road safety audit team and how to conduct a road safety audit and the determination of future inspections



AnFab Consult Copyright Reserved

25

MODULE 1 – LEGISLATION



AnFab Consult Copyright Reserved

26

MODULE 1 - LEGISLATION: NATIONAL ROAD TRAFFIC ACT AND REGULATIONS



AnFab Consult Copyright Reserved

27

LEGISLATION – MINIMUM REQUIREMENTS

➤ Legislation:

The legislation pertaining to Road Traffic Signs is:

Sections 56 to 59 of the National Road Traffic Act 1996,(Act 93 of 1996)

and

Regulations 284 to 291 of the National Road Traffic Signs Regulations, 2000



AnFab Consult Copyright Reserved

28

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC ACT 93 OF 1996

- Section 56 allows the Minister to prescribe road traffic signs.
- Section 57 determines the requirements for the display of road traffic signs and enables the various authorities to display road traffic signs.



AnFab Consult Copyright Reserved

29

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC ACT 93 OF 1996

Section 56

- (3) (a) A local authority, or any person in its employment authorized thereto by it either generally or specifically, may in respect of any public road within the area of jurisdiction of that local authority display or cause to be displayed in the prescribed manner any such road traffic signs as such authority or person may deem expedient.



AnFab Consult Copyright Reserved

30

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC ACT 93 OF 1996

Section 57

- (b) A local authority may **in writing authorise** any other person or body to display or cause to be displayed within its area of jurisdiction and in the prescribed manner any road traffic sign approved by it prior to the display of such sign.



AnFab Consult Copyright Reserved

31

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC ACT 93 OF 1996

Section 89. Offences and penalties

- (1) Any **person who contravenes or fails** to comply with any provision of this Act or with any direction, condition, demand, determination, requirement, term or request thereunder, shall be **guilty of an offence.**



AnFab Consult Copyright Reserved

32

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC ACT 93 OF 1996

Section 89. Offences and penalties

The effect of this is that, if a specific sign is permitted and prescribed in the legislation and a sign, which **do not conform** to the legislation, is displayed, it is illegal in terms of section 89 and is technically an offence. A person would be able to lay a **criminal charge** against an authority that does not comply with the legislation.



AnFab Consult Copyright Reserved

33

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC REGULATIONS, 2000



AnFab Consult Copyright Reserved

34

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC REGULATIONS, 2000 Applicable Regulations

Regulation 286A. Colours for manufacture of road traffic signs

(5) Subject to the provisions of this Part, the colour of the standard or post specifically erected for the display of a road sign shall, where the standard or post is-

(a) of **steel, be grey**: Provided that if the steel has been treated this requirement shall not apply;



AnFab Consult Copyright Reserved

35

LEGISLATION – MINIMUM REQUIREMENTS



NATIONAL ROAD TRAFFIC REGULATIONS, 2000 Applicable Regulations

Regulation 286A. Colours for manufacture of road traffic signs

(5) Subject to the provisions of this Part, the colour of the standard or post specifically erected for the display of a road sign shall, where the standard or post is-

(b) of **wood**, be the colour of the wood as treated or painted grey or brown; and.....



AnFab Consult Copyright Reserved

36

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS,

Regulation 286A. Colours for 2000 manufacture of road traffic signs

(c) of **concrete**, be the natural colour of the concrete, and in the case of a road signal the standard, post or cantilever shall be golden yellow, portions of which may be retro-reflective; Provided that this provision shall not be applicable to an overhead traffic signal mounted on a gantry.



AnFab Consult Copyright Reserved

37

LEGISLATION – MINIMUM REQUIREMENTS

286. (1) (a) The minimum external dimensions in millimetres of regulatory and warning signs are given in relation to the speed limit in kilometres per hour pertaining to the section of public road on which the signs are erected: Provided that a tolerance of five percent below such minimum dimension shall be permissible.

(b) The minimum dimensions and speed referred to in subregulation (1) shall, subject to paragraph (c) be—
(i) for circular regulatory signs as shown in the table below:

SIGN TYPE		0 - 60	61 - 80	81 - 100	101 - 120
Speed limit					
Diameter	General	600	900	1 200	1 200
	Overhead	900	1 200	1 200	1 600
	Parking and Stopping	450	900	1 200	1 200

TEMPORARY Regulatory SIGN SIZES
SARTSM VOL 2 CH 13 Item 13.1.3 (i)

URBAN

RURAL FREEWAY

NATIONAL ROAD TRAFFIC REGULATIONS,

2000 REGULATION 286



AnFab Consult Copyright Reserved

38

LEGISLATION – MINIMUM REQUIREMENTS

(ii) for triangular regulatory and warning signs as shown in the table below:

Speed limit	0 - 60	61 - 80	81 - 100	101 - 120
Side length	900	1 200	1 200	1 600

URBAN

RURAL FREEWAY

TEMPORARY Warning SIGN SIZES
ARTSM VOL 2 CH 13 Item 13.1.3 (i)

NATIONAL ROAD TRAFFIC REGULATIONS,
2000 REGULATION 286



AnFab Consult Copyright Reserved

39

LEGISLATION – MINIMUM REQUIREMENTS

(i) **Regulatory Signs:**

(aa) **Control Signs:**

Stop sign:

COLOURS:

Border and symbol:

Background:

Back of sign:



White retro-reflective

Red retro-reflective

White semi-matt

NATIONAL ROAD TRAFFIC REGULATIONS,

2000



AnFab Consult Copyright Reserved

40

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS,

Regulation 286A. Colours for 2000 manufacture of road traffic signs



2 (4) The reverse side of a road sign, other than a road sign with an aluminium background, shall be grey, except that, irrespective of the material of manufacture, **the reverse side of a stop sign shall be white semi-matt.**



AnFab Consult Copyright Reserved

41

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS, 2000

Roadworks sign:

COLOURS:

Triangle:	Red retro-reflective
Symbol:	Black semi-matt
Background:	Yellow retro-reflective

Warns a road user that temporary road construction, maintenance or related work is in progress ahead.



AnFab Consult Copyright Reserved

42

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS,

2000

Part III – DIMENSION OF VEHICLES

Regulation 221. Overall Length of Vehicle : **22m**

Regulation 223. Overall Width of Vehicle : **2,6m**

Regulation 224. Overall Height of Vehicle : **4,65m**



AnFab Consult Copyright Reserved

43

ABNORMAL VEHICLES



AnFab Consult Copyright Reserved

44

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS, 2000

Regulation 292. General Speed Limits

A general speed limit of-

- (a) 60 kilometres per hour shall apply in respect of every public road or section thereof, situated within an urban area;
- (b) 100 kilometres per hour shall apply in respect of every public road or section thereof, other than a freeway, situated outside an urban area; and



AnFab Consult Copyright Reserved

45

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS, Regulation 292. General Speed Limits



A general speed limit of-

- (c) 120 kilometres per hour shall apply in respect of every freeway.



AnFab Consult Copyright Reserved

46

LEGISLATION – MINIMUM REQUIREMENTS

NATIONAL ROAD TRAFFIC REGULATIONS, 2000

Applicable Regulations


- Regulation 316. Duties of Pedestrians
- Regulation 315. Pedestrian's Right of Way in Pedestrian Crossing
- Regulation 318. Convoys on Public Road
- Regulation 319. Hindering or Obstruction Traffic on Public Road
- Regulation 321. Damage on Public Roads




AnFab Consult Copyright Reserved

47






Complete assignment- Module 1



Please note the **slide number** with the question and forward to anfabconsult@gmail.com




AnFab Consult Copyright Reserved

49




MODULE 2 - CRIMINAL AND TORT LIABILITY




AnFab Consult Copyright Reserved

50




LIABILITY Criminal Liability

In the case of a private company the **directors would be responsible**. A director is normally charged and not the servants, although it is **possible to charge a servant as well**.




AnFab Consult Copyright Reserved

51



LIABILITY Criminal Liability

Section 332 of the Criminal Procedure Act, 1977 allows for juristic persons to be criminally prosecuted. A **director or servant** of such a juristic person must then represent the legal person in **court**.



AnFab Consult Copyright Reserved

52



LIABILITY

Tort Liability

In situations where a **person or authority does not act according to the norm** acceptable for the circumstances and situation and due to the actions or negligence of its directors or servants cause damage and **are accountable for their actions.**



AnFab Consult Copyright Reserved

53



LIABILITY

Tort Liability

Tort liability arises when there is a legal duty to perform a certain task and the **task is not performed or performed incorrectly.**



AnFab Consult Copyright Reserved

54



LIABILITY

Tort Liability

Guideline documents like the SADC Road Traffic Signs Manual and the Road Safety Manual will normally only be **applicable to tort liability cases.**



AnFab Consult Copyright Reserved

55



LIABILITY

Tort Liability

If guidelines are not followed, an authority should document the details and reasons for the diversion



AnFab Consult Copyright Reserved

56

LIABILITY

Tort Liability

Employees change or get promoted and it is not later possible to determine reasons for diversions from guidelines.



AnFab Consult Copyright Reserved

57



LIABILITY

Tort Liability

Keep record of all signs displayed at each project for future reference.



AnFab Consult Copyright Reserved

58

TRAFFIC SAFETY OFFICER

Crash Investigations and Criminal Liability Cases

In the case of a private company the **directors would be responsible**. A director is normally charged and not the servants (TSO), although it is **possible to charge a servant (TSO)** as well.



AnFab Consult Copyright Reserved

59

TRAFFIC SAFETY OFFICER

Crash Investigations and Liability

Documentation Required (TSO)

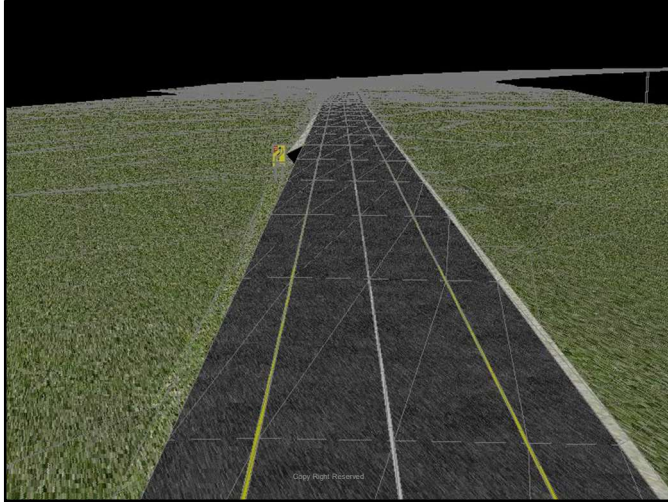
- Approved traffic control plan(TCP)
- Engineer approval certificate to proceed with deviation or detour
- TSO Inspection certificate and photos
- Traffic management plan(TMP)
- Remedial measures
- Traffic management system



AnFab Consult Copyright Reserved

60





Complete assignment – Module 2



Please note the **slide number** with the question and forward to anfabconsult@gmail.com



AnFab Consult Copyright Reserved

62

MODULE 3 – ROAD TRAFFIC SIGNS AND MARKINGS IN COMPLIANCE WITH LEGISLATION



AnFab Consult Copyright Reserved

63

ROAD TRAFFIC SIGNS

SADC Road Traffic Signs Manual Volume 1:

- Uniform Traffic Control Devices: Detailing signing policies and design principles together with specific information on the meaning and individual application of all traffic control devices



AnFab Consult Copyright Reserved

64

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



PRINCIPLES OF ROAD TRAFFIC SIGNING

- Give a positive message in preference to a negative message whenever such a choice is available;
- use symbols or diagrams in preference to words;
- Signs should preferably have the same appearance by day and by night (use of retroreflective material);
- limit the amount of information given at any one time to what can reasonably be observed and processed by road users; however,
- When two required messages are linked or complement each other, such as a regulatory message and a warning message, it will commonly improve the effectiveness of message transfer to mount the relevant signs together;
- the overall approach to signing should embody the principles of positive guidance (see Section 1.8);



AnFab Consult Copyright Reserved

65

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



REQUIREMENTS FOR TRAFFIC CONTROL DEVICES

The functions of traffic control devices include:

- the **regulation** of traffic by assigning right-of-way and indicating regulations in force;
- the **warning** of road users of hazards and of hazards ahead, or of regulatory controls ahead; they may often be temporary devices warning of the hazards to road users or to workers and plant working on the road;
- the **guidance** of traffic by the indication of direction, distance, location and other navigational information; and locally in the selection of the correct portion of the roadway;
- the provision of **additional information** to road users.



AnFab Consult Copyright Reserved

66

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



INTRODUCTION - REQUIREMENTS - **TERMINOLOGY**

- **Shall** - Regulatory
- **Should** - Warning
- **May** - Chevrons



AnFab Consult Copyright Reserved

67

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



REQUIREMENTS FOR TRAFFIC CONTROL DEVICES

Failure to fulfil the required functions may be the result of:

- **inadequate engineering** study prior to installation;
- **disregard for specific site conditions** such as gradient, sight distance, or road surface and the local effects of human factors, vehicle limitations or weather conditions;
- **lack of maintenance** or misuse which encourages disrespect;
- **inadequate geometric design** - traffic control devices cannot be expected to correct or alleviate deficiencies in geometric layout.



AnFab Consult Copyright Reserved

68

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



REQUIREMENTS FOR TRAFFIC CONTROL DEVICES

The following criteria should be employed to ensure that the required functions are met:

- design (see Section 1.4 and Chapters 2 to 7);
- placement (see Section 1.6);
- application (see all Chapters and Volume 2);
- maintenance (see Sections 1.10 and 1.11);
- uniformity.



AnFab Consult Copyright Reserved

69

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



REQUIREMENTS FOR TRAFFIC CONTROL DEVICES

To achieve these objectives, road traffic signs should comply with the following requirements:

- **conformity** involving disciplined compliance with nationwide policy so that road users may be assured of the same signing principles and standards wherever they may be in the system;
- **accuracy** of signface display to eliminate confusion which may be experienced by road users if sign messages do not relate to what can be seen on the road ahead;
- **uniformity** of signface layout, colour code and sign display sequence to enhance road users' abilities to get the best from the system by reducing reading times;
- **consistency** of signing practice so that like situations are signed in a like manner;
- **continuity** of message display until the information is no longer relevant.



AnFab Consult Copyright Reserved

70

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



INTRODUCTION - REQUIREMENTS FOR TRAFFIC CONTROL DEVICES.

- Consistent with the requirement that they shall fulfil a need, care shall be exercised **not to install too many signs** thereby risking bringing the sign system into disrespect.
- It is recommended that the use of **regulatory and warning signs be undertaken conservatively** so that those that are really needed are effective.
- However, to achieve **reassurance** and continuity of navigational information route markers and direction signs should be displayed at **regular intervals**.



AnFab Consult Copyright Reserved

71

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1



INTRODUCTION - **ENGINEERING STUDY**

The SADC Road Traffic Signs Manual (RTSM) includes warrants and specific guidelines in relation to the use of many of the traffic control devices it covers.

The SADC RTSM is, however, **NOT** a **substitute** for good engineering judgement.



AnFab Consult Copyright Reserved

72

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



INTRODUCTION - **ENGINEERING STUDY**

- ✓ The decision whether or not to use a particular device, and, if one is to be used, the decision on how it shall be used, should be made at the very least on the basis of an inspection of the site.
- ✓ Specific site factors and the presence of other devices will influence the use of a proposed new device. **It is strongly recommended that engineering studies be undertaken by qualified traffic engineers or traffic officers.**
- ✓ If an authority does not have suitably qualified personnel they should seek assistance from larger authorities or a traffic engineering consultant.



AnFab Consult Copyright Reserved

73

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1



INTRODUCTION - **UNIFORMITY OF TRAFFIC CONTROL DEVICES**

Uniformity of practice means treating similar situations in the same way. The use of a uniform specified or manufactured traffic control device does not in itself constitute uniformity.

Standard devices used in a standard manner, in appropriate circumstances, reduce the time road users need to recognise and understand the message and to choose a course of action.

The meaning of the device should ideally be apparent at a glance.



AnFab Consult Copyright Reserved

74

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1



INTRODUCTION - **UNIFORMITY OF TRAFFIC CONTROL DEVICES**

Uniformity of device and application is essential to law enforcement and for traffic safety.

A standard device used in an incorrect manner can be as bad or worse than a non-standard device, and can cause significant disrespect and disregard for the law.

The meaning of the device should ideally be apparent at a glance.



AnFab Consult Copyright Reserved

75

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1



INTRODUCTION - **UNIFORMITY OF TRAFFIC CONTROL DEVICES**

The need for uniformity is becoming more important for the following reasons:

- ☐ present-day driving is becoming increasingly complex;
- ☐ the liability of government, at all levels, for public safety is increasing;
- ☐ uniformity of design and manufacture result in economic unit rates;
- ☐ a wide range of driver capabilities have to be catered for;
- ☐ the amount of travel in unfamiliar road and street systems is increasing.



AnFab Consult Copyright Reserved

76

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1

INTRODUCTION - PLACEMENT OF TRAFFIC CONTROL DEVICES

Traffic control devices and their supports shall be placed for the purpose of regulating, warning, guiding and informing road users only on the authority of a public body or official having jurisdiction.

No traffic control device or its support shall bear any advertising message or any other message not essential to the control of traffic, with the exception of STREET NAME signs GL1 and SUBURB NAME signs GL2 (see Section 1.9).



AnFab Consult Copyright Reserved

77

ROAD TRAFFIC SIGNS

SADC – RTSM : Volume 1

INTRODUCTION - PLACEMENT OF TRAFFIC CONTROL DEVICES

Details of the orientation and longitudinal, lateral and vertical placement of signs is given in Section 1.6.

Ministers, Administrators, or duly authorised officials, have the power in terms of Road Traffic Legislation, to remove, or order the removal of, any non-prescribed or unauthorized sign.



AnFab Consult Copyright Reserved

78

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION - PRINCIPLES OF SIGNING

The principles of design and application of road traffic signs are detailed in the chapters of this volume.

These principles are summarized in this subsection.

The principles of design and application of road traffic signs are detailed in the chapters of this volume.

These principles are summarized in this subsection.



AnFab Consult Copyright Reserved

79

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION - PRINCIPLES OF SIGNING

All road traffic signs shall conform to the requirements SADC RTSM.

The guidelines given in the Manual conform, in general terms, to the following basic principles or assumptions:

- ✓ give a positive message in preference to a negative message whenever such a choice is available;
- ✓ use symbols or diagrams in preference to words;
- ✓ signs should preferably have the same appearance by day and by night (use of retroreflective material);
- ✓ limit the amount of information given at any one time to what can reasonably be observed and processed by road users; however,



AnFab Consult Copyright Reserved

80

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION - PRINCIPLES OF SIGNING

All road traffic signs shall conform to the requirements SADC RTSM.

The guidelines given in the Manual conform, in general terms, to the following basic principles or assumptions:

- ✓ limit the amount of information given at any one time to what can reasonably be observed and processed by road users; however,
- ✓ when two required messages are linked or complement each other, such as a regulatory message and a warning message, it will commonly improve the effectiveness of message transfer to mount the relevant signs together



AnFab Consult Copyright Reserved

81

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION - PRINCIPLES OF SIGNING

All road traffic signs shall conform to the requirements SADC RTSM.

The guidelines given in the Manual conform, in general terms, to the following basic principles or assumptions:

- ✓ the overall approach to signing should embody the principles of positive guidance (see Section 1.8);
- ✓ all candidate destination names cannot be displayed at any given point;
- ✓ pre-trip planning is essential;
- ✓ regional, area or district names are not a precise enough source of information.



AnFab Consult Copyright Reserved

82

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION -

REQUIREMENTS FOR SAFETY CONTROL DEVICES

In order that they may best fulfil their required function traffic control devices shall:

- ✓ fulfil a need;
- ✓ command attention;
- ✓ command the respect of road users;
- ✓ convey a clear, simple meaning at a glance;
- ✓ allow adequate time to the correct response from road users.



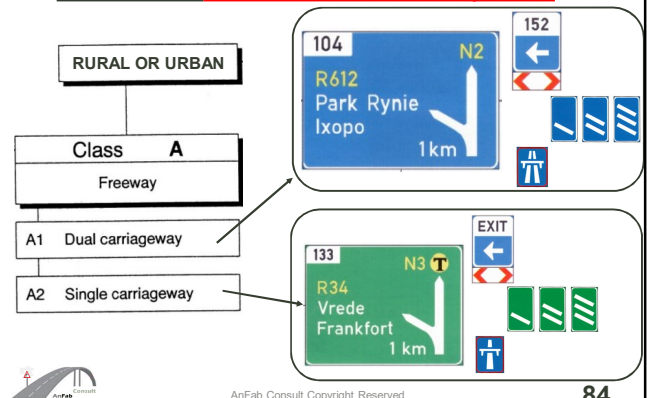
AnFab Consult Copyright Reserved

83

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION – ROAD CLASSIFICATION – Freeway Class A








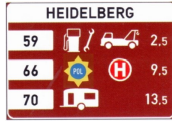


AnFab Consult Copyright Reserved

84

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – Freeway Tourism Signs:

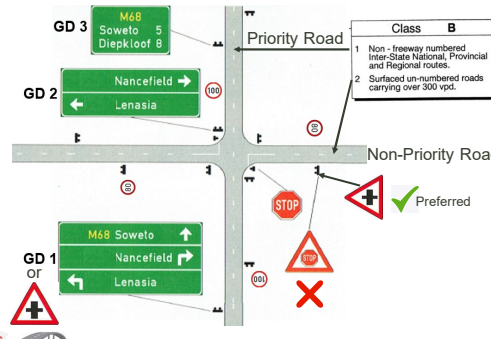






85

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – ROAD CLASSIFICATION RURAL CLASS B ROADS
Typical Intersection Layout




Class B

- Non - freeway numbered Inter-State National, Provincial and Regional routes.
- Surfaced un-numbered roads carrying over 300 vpd.

86

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – ROAD CLASSIFICATION RURAL CLASS B ROADS
Typical Sign Sequence - Start of Link



Class C

- Surfaced un-numbered routes carrying less than 300 vpd.
- Gravel un-numbered roads with public destinations.

Ch Priority Road

Cl Non - Priority Road

Class D

Local access - no public destinations.

Dh Priority Road

Di Non - Priority Road

Class E

Access road - private.

87

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – RURAL ROAD CLASSIFICATION;
CLASSES C, D AND E (UN-NUMBERED)

Class C

- Surfaced un-numbered routes carrying less than 300 vpd.
- Gravel un-numbered roads with public destinations.

Ch Priority Road

Cl Non - Priority Road

Class D


Local access - no public destinations.

Dh Priority Road


Di Non - Priority Road

Class E

Access road - private.



Class B Numbered



88

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – URBAN ROAD CLASSIFICATION:
CLASS B (NUMBERED)

Guidance sign in advance of intersection GD1

Guidance sign at intersection GD2

AnFab Consult Copyright Reserved 89

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – URBAN ROAD CLASSIFICATION:
CLASS C and D (UN-NUMBERED)

Class C

Un-numbered urban streets of intermediate importance

C1 Tertiary Arterial

C2 Local Collector Distributor Streets

Class D

Local residential streets.

AnFab Consult Copyright Reserved 90

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual :
Volume 1
INTRODUCTION –
REQUIREMENTS FOR SAFETY CONTROL DEVICES

In order that they may best fulfil their required function traffic control devices shall:

- ✓ fulfil a need;
- ✓ command attention;
- ✓ command the respect of road users;
- ✓ convey a clear, simple meaning at a glance;
- ✓ allow adequate time to the correct response from road users.

AnFab Consult Copyright Reserved 91

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
INTRODUCTION – ;
ROAD SIGN CLASSIFICATION - **REGULATORY signs**

Permanent

Temporary

	Permanent	Temporary
Control		
Command		
Prohibition		
Reservation		

SHALL Display

AnFab Consult Copyright Reserved 92

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION –
ROAD SIGN CLASSIFICATION – **WARNING SIGNS** signs

W

Advance Warning

Hazard Markers

SHOULD Display

AnFab Consult Copyright Reserved

93

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION –
ROAD SIGN CLASSIFICATION – **GUIDANCE** signs

G

Location: MHLAMBANYATSI RD

Route Marker: CHIPENBERE HIGHWAY

Direction: M2 • Limbe, M2 • Blantyre

Freeway Direction (Class A1): Johannesburg, Krugersdorp, Pretoria

Freeway Direction (Class A2): 153 Koppieskraal, Riversford 500 m

Tourism Direction: 534

Local Direction: Marie Louise

Diagrammatic: ↑↑↑

Pedestrian: ↑

AnFab Consult Copyright Reserved

94

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

INTRODUCTION –
ROAD SIGN CLASSIFICATION – **INFORMATION** signs

I

IN11.1 Advisory speed: 80km/h

IN11.2 Distance "For": For 7km

IN11.3 Distance "To": 400 m

IN11.4 Text: Elderly People

IN11.5 Symbol: 1km

IN11.6 Road or Local Authority: Dalpark 3km

AnFab Consult Copyright Reserved

95

ROAD TRAFFIC SIGNS

SARTSM – South African Road Traffic Signs Manual : Volume 2

REQUIREMENTS FOR TRAFFIC CONTROL DEVICES

- ✓ the **regulation** of traffic by assigning right-of-way and indicating regulations in force;
- ✓ the **warning** of road users of hazards and of hazards ahead, or of regulatory controls ahead; they may often be temporary devices warning of the hazards to road users or to workers and plant working on the road;
- ✓ the **guidance** of traffic by the indication of direction, distance, location and other navigational information; and locally in the selection of the correct portion of the roadway;
- ✓ the provision of additional **information** to road users

AnFab Consult Copyright Reserved

96

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE

- Backing Plate;
- Retro-reflective Sheeting;
- Rivets on sign Faces;
- Manufacturing Date on Back of Sign.

97

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Steel Backing Plate Materials – see COTO A11.6.5.2

- Flat Steel plate for road signs, prior to the application of any reflective sheeting or painting, shall be **1,4 mm thick** Z275 galvanized steel plate
- Standard sign profiles shall be 200 mm steel sections with a thickness, prior to the application of any reflective sheeting or painting, be **1,0 mm thick Z275** galvanized steel plate, which has been treated on both sides to the paint system requirements specified in COTO Table A11.6.5-1) and shall comply with the details on the drawings.
- Rivets on sign Faces;
The colors of rivets shall match the background color of the reflective and or matt sheeting

98

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Steel Backing Plate Materials – see COTO A11.6.5.2



1.0mm Thick Steel Backing Plate Profiles

1.4mm Thick Steel Backing Plate with Stiffeners (Single support)

Steel plate for road signs shall be **1,40 mm (single support) & 1,0 mm (frames or panels)** thick prepainted galvanized steel plate (Isacor Z275 "Chromadek" or approved equivalent), which has been treated on both sides with an epoxy primer followed by a silicon polyester topcoat. The total dry thickness of the treatment shall be at least 25 μ m.

99

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Retro-reflective material shall be supplied in the following grades and shall comply with the requirements of SANS 1519:

- Class I material - 7-year warranty grade
- Class III material - 10-year warranty grade
- Class IV a) and b) material - 10–12-year warranty grade

The use of materials from different manufactures or different batches for the same color shall not be used on any one sign.

100

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Visibility of Reflective Signs

Visibility: ≤180m ≤360m ≤480m
Reflectivity Warranty: 7 Years 10 Years 12 Years

101

ROAD TRAFFIC SIGNS

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Road Traffic Sign – Cone and Distance of Retro-reflectivity

Class I **Low risk (Urban <40km/h)** Glass beaded
8% Light return

Class III **Medium risk (Rural <60km/h)** High Intensity
Prismatic
32% Light return

Class IV **High risk (Freeway)** Full cube prismatic
58% Light return

102

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Road Traffic Sign – Cone Retro-reflectivity

103

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Reflected Light in Divergence Cone

Light Source Direction

Cone of Returned Light

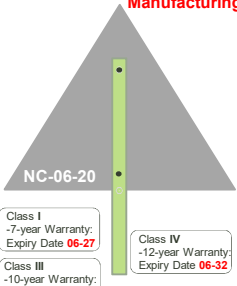
104

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE – Manufacturing Date – Identification Code

COTO ref: A11.6.7.3 c)



The manufacturer **shall** paint an **identification code** on the reverse side of every completed road sign board in the lower corner nearest to the road surface in a position where the code will not be obscured by the framework or the erection posts.

The code shall be in the form **X-MM-JJ** where X is the letter used by the manufacturer to identify the manufacturer and MM-JJ indicates the month and year of the manufacture.

These letters shall be painted in **white** (black on STOP signs) and shall not be larger than **50 mm in height**.

No marketing shall be allowed on the back of the sign.

Class I
-7-year Warranty:
Expiry Date **06-27**

Class III
-10-year Warranty:
Expiry Date **06-30**

Class IV
-12-year Warranty:
Expiry Date **06-32**

Reflective Expiry Date

105

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE – SIGN SUPPORT COLOURS

The colour of any post specifically erected for the display of a road sign shall be as follows:

- (a) if the post is **steel** - **grey**, or the natural colour if plated (galvanised);
- (b) if the post is **wood** - the colour of the wood as treated;
- (c) if the post is **concrete** - the natural colour of concrete.

If the road sign is mounted on the same post as a **traffic signal**, the above requirements shall not apply and the colour of such a post shall be the **golden yellow** specified as standard for traffic signal supports

106

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE – Retro-Reflective Sheetting Material Colours

White		Black	
Red		Yellow	
Brown		Blue	
Green		Orange	
Grey			

Approved Colours


Fluorescent YELLOW GREEN –
Vulnerable Road Users –
TO BE APPROVED

BEWARE OF CYCLISTS

Application for approval
submitted to
road signs sub-committee

107

SCHOOL ZONES



TYPICAL FLUORESCENT YELLOW GREEN REFLECTIVE SHEETING
RECOMMENDED FOR VULNERABLE ROAD USERS AND SCHOOL ZONES

108

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 4

REGULATORY COMMAND SIGNS DIMENSIONS AND MANUFACTURING

R103

TR103

Keep Left

Ref.
V1 2.3.3
V4 2.3.3

TEMPORARY SIGN

PERMANENT SIGN

NOTES:

- (1) The sign dimensions indicated by letter in the diagram above are indicated for each standard COMMAND sign size on the individual sign pages in Section 2.2.
- (2) All dimensions are given in millimetres.
- (3) The above diagram illustrates both PERMANENT and TEMPORARY COMMAND signs. The border of the PERMANENT sign, which is white, has a width 'T' whereas the border of the TEMPORARY sign, which is black, has a width of '2SD' and it is set in from the edge of the sign a distance of '1SD'.
- (4) Border widths are provided for signs used on HIGH VISIBILITY background signs (see Figure 2.12 to 2.19 and Figure 2.23).
- (5) Refer to individual sign pages for complete details of sign colours.

AnFab Consult Copyright Reserved

109

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 4

REGULATORY COMMAND SIGNS DIMENSIONS AND MANUFACTURING

100

Prohibition

NOTES:

- (1) The sign dimensions indicated by letter in the diagram above are indicated for each standard PROHIBITION sign size on the individual sign pages in Section 2.4. The diagram applies only to PROHIBITION signs with a diagonal slash which is located symmetrically about the centre point of the circular sign (see Figures 2.2 and 2.4).
- (2) All dimensions are given in millimetres.
- (3) The above diagram illustrates both PERMANENT and TEMPORARY PROHIBITION signs with a symmetrical diagonal slash. The slash may be from lower left to upper right of the sign, or from lower right to upper left. The angle subtended at the horizontal centre line varies from sign to sign to best suit the symbol in use. The diagonal slash is located by letters 'V', 'S' and 'W'.
- (4) Refer to individual sign pages for details of sign colours.
- (5) See Figures 2.12 to 2.19 and Figure 2.23 for HIGH VISIBILITY background treatment.

AnFab Consult Copyright Reserved

110

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 4

REGULATORY COMMAND SIGNS DIMENSIONS AND MANUFACTURING

Start of Median

Start of Temporary Freeway Transition Area

COMMAND

PROHIBITION

TABLE 1: DIMENSIONS (mm)

W	L	R	H	d
1200	900	100	30	50
1600	1200	120	40	75
2400	1800	150	60	100

TABLE 2: COLOURS

COLOUR	PERMANENT	TEMPORARY
Background	Blue	Yellow
Border	White	Black
Regulatory sign	Black	Black
Prohibition sign	Red	Red
Start of Temporary Freeway Transition Area	Black	Black

AnFab Consult Copyright Reserved

111

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 4

REGULATORY COMMAND SIGNS DIMENSIONS AND MANUFACTURING

Road Closed

Detour to N1 Musina Beitbridge

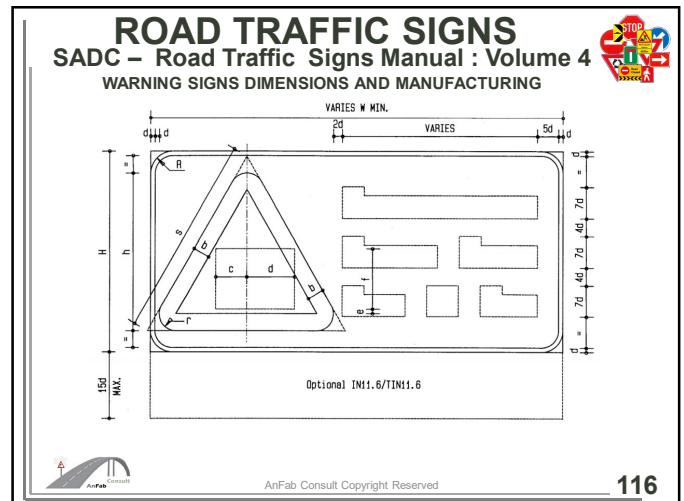
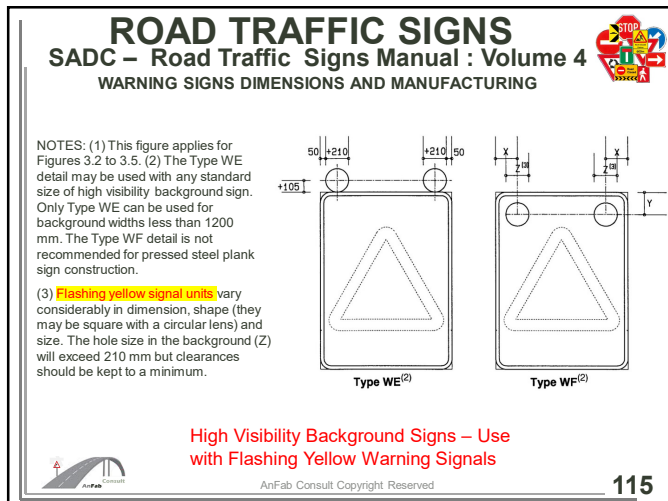
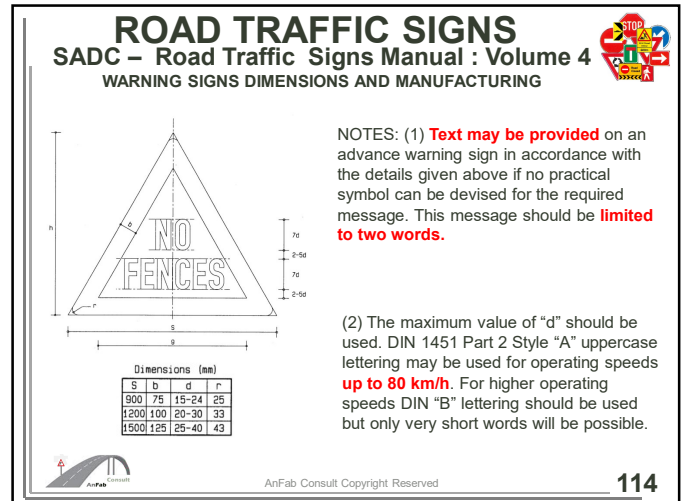
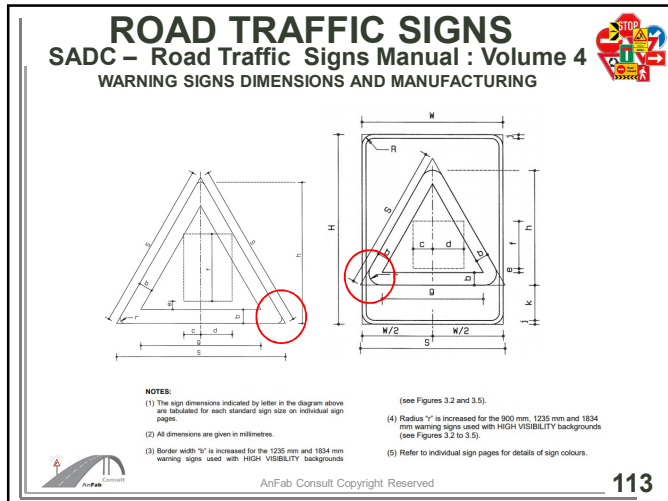
Road Closed

TABLE 1: DIMENSIONS (mm)

W	L	R	H	d
1200	900	100	30	50
1600	1200	120	40	75
2400	1800	150	60	100

AnFab Consult Copyright Reserved

112



ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 4

WARNING SIGNS DIMENSIONS AND MANUFACTURING







WILD ANIMALS AHEAD warning signs W313 (GENERAL), W357 (ELEPHANT), W358 (WARTHOG), and W359 (HIPPO) are to warn road users of the possible presence of wild animals, or specifically elephant, warthogs or hippo straying in the roadway ahead.

Signs W313, W357, W358 and W359 should be displayed in advance of sections of roadway where straying wild animals create a hazard. If the hazard relates to wild animals in general, sign W313 should be used. If, however, a specific breed of animal is a problem the use of the appropriate sign W357, W358 or W359 is recommended.

The sign should be located in accordance with the provisions of Figure 3.1. If the section is more than 2 kilometres in length the distance should be displayed on a supplementary distance information plate, mounted on the same post below the main sign and the sign **should be repeated at suitable intervals** (see Section 3.6).

Temporary versions of signs W313, W357, W358 and W359 are **unlikely** to be used, but if required should be numbered and referred to as TW313, TW357, TW358 and TW359 respectively.

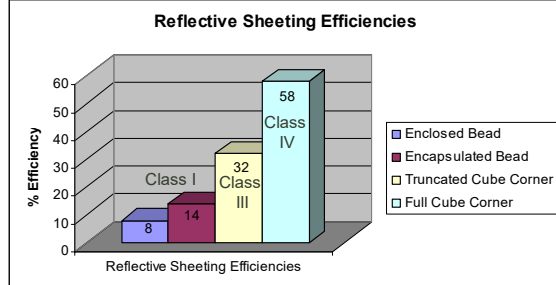

AnFab Consult Copyright Reserved
117

ROAD TRAFFIC SIGNS


SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE – Retro-Reflective Sheeting Material

Reflective Sheeting Efficiencies



Class	Enclosed Bead	Encapsulated Bead	Truncated Cube Corner	Full Cube Corner
Class I	8	14	32	58
Class III	-	-	32	58
Class IV	-	-	32	58

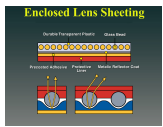
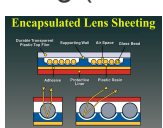

AnFab Consult Copyright Reserved
118


ROAD TRAFFIC SIGNS

SIGNS SPECIFICATION AND MANUFACTURE – Retro-Reflective Sheeting Material

Glass Bead Technology

- Enclosed Lens Sheeting (Class 1)
 - Introduced 1940's
 - Narrow Ent. Angle
 - Efficiency – 8%
 - Durability – 7 years
- Encapsulated Lens Sheeting (Class 3)
 - Introduced 1970's
 - Wider Ent. Angle
 - Efficiency – 14%
 - Durability – 10 years


AnFab Consult Copyright Reserved
119

ROAD TRAFFIC SIGNS

SIGNS SPECIFICATION AND MANUFACTURE – Retro-Reflective Sheeting Material

In glass bead retroreflection, an incoming light beam bends as it passes through a glass bead and is reflected off of a mirrored surface behind the bead. The light then passes back through the bead, bending again as it leaves the bead, and returns toward the light source.

This type of retroreflection is less efficient compared to cube corners.



How Glass Bead Technology Works

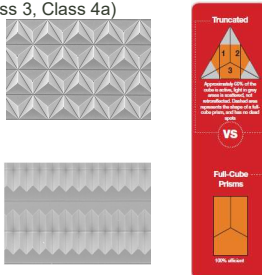
Copy Right Reserved
120

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

- Truncated Cube Optics (Class 1, Class 3, Class 4a)
 - Introduced
 - Class 4 1987
 - Class 3 2003
 - Class 1 2009
 - Durability – 7 to 10 yrs
 - Efficiency – 32% (4X EGB)
- Full Cube Optics (Class 4a + 4b)
 - Introduced 2005
 - Durability – 10 to 12 yrs
 - Efficiency – 58% (2X Truncated Cube)

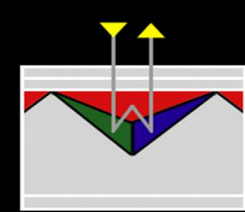


121

ROAD TRAFFIC SIGNS

SIGNS SPECIFICATION AND MANUFACTURE –
Retro-Reflective Sheeting Material

Cube corners are retroreflective elements. Each cube corner has three carefully angled reflective surfaces. Incoming light bounces off of all three surfaces and returns to its source.

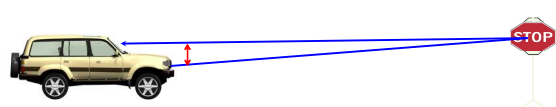


How Prismatic Technology Works

122

Observation Angle

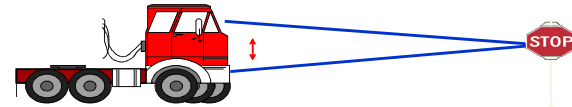
- The angle between the line formed by a headlight beam striking a sign surface and the line formed by the retro-reflected light beam at the driver's eye
- This angle is usually small (e.g. 0,2 / 0,33 degrees)



123

Observation Angle

- Observation angle is a critical factor when determining how bright a sign appears
- As the observation angle increases the sign will appear less bright

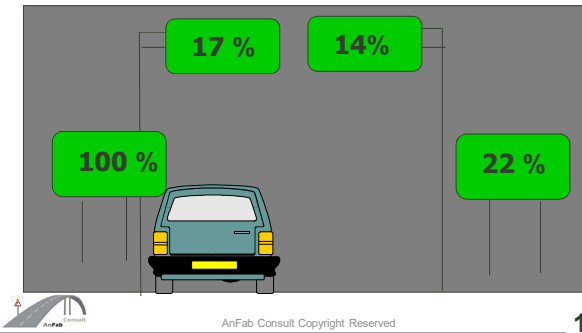


124

Sign Design Principles



The amount of light available to the traffic sign varies depending on the position of the sign and the vehicle.



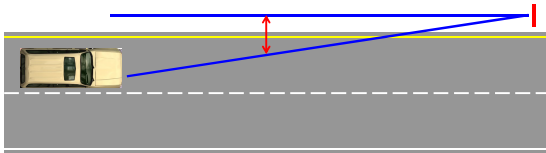
125

Copyright Reserved

Entrance Angle



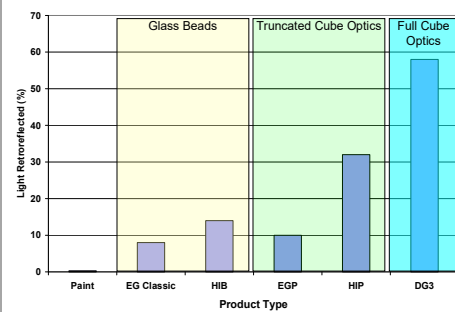
- The angle between the line formed by a light beam striking the sign surface at some point and a line perpendicular to the sign surface at that same point.



AnFab Consult Copyright Reserved

127

Road Traffic Sign Retro-reflectivity



Reflective Sheeting Light Return Efficiency



AnFab Consult Copyright Reserved

128

Sheeting Identification Guide

SARTSMA Retro-reflective Sheeting for Road Traffic Signs Identification Guide – 2016

Note: This document is intended to be used as a reference guide for the identification of retro-reflective sheeting materials. It is not intended to be used as a specification for the materials. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo.

Sample of Sheeting	Material	Material	Material	Material	Material
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN

SARTSMA Retro-reflective Sheeting for Road Traffic Signs Identification Guide – 2016

Note: This document is intended to be used as a reference guide for the identification of retro-reflective sheeting materials. It is not intended to be used as a specification for the materials. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo.

Sample of Sheeting	Material	Material	Material	Material	Material
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN

SARTSMA Retro-reflective Sheeting for Road Traffic Signs Identification Guide – 2016

Note: This document is intended to be used as a reference guide for the identification of retro-reflective sheeting materials. It is not intended to be used as a specification for the materials. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo. The materials are identified by their appearance and the SARTSMA logo.

Sample of Sheeting	Material	Material	Material	Material	Material
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN
SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN	SAFETY SIGN

Copy Right Reserved

129

Summary - Reflective Sheeting Performance



- Why Upgrade to more Efficient Retro-Reflective Technology?
 - Changing Driving Infrastructure
 - Older drivers
 - Larger vehicles
 - Changing headlamp pattern
 - Increasing urbanization
- Benefits of Higher Luminance
 - Increased Efficiency provides
 - Increased conspicuity
 - Increased legibility
 - Improved information acquisition time
 - Increase in safety



AnFab Consult Copyright Reserved

130

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



SIGNS SPECIFICATION AND MANUFACTURE –

Retro-Reflective Sheeting Material – **Temporary Signage**

(See SARTSM Volume 2 Chapter 13 for guidelines and applications)



Detail 1.10.1 Temporary Regulatory Signs



Detail 1.10.2 Temporary Warning Signs



Detail 1.10.3 Temporary Guidance Signs

Class IV Fluorescent- Yellow retro-reflective sheeting recommended

AnFab Consult Copyright Reserved

131

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



SIGNS SPECIFICATION AND MANUFACTURE –

Retro-Reflective Sheeting Material – **Temporary Signage**

(See SARTSM Volume 2 Chapter 13 for guidelines and applications)



Class IV Fluorescent- Yellow retro-reflective sheeting recommended

AnFab Consult Copyright Reserved

132

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT - LONGITUDINAL

Road signs generally fall into one of two groups with regard to their longitudinal position.

They are either located at the point of reference, or at a determined distance in advance of the point of reference.

The point of reference may be one of:

- (a) the commencement of a regulatory control;
- (b) a hazard to road users;
- (c) a road junction



AnFab Consult Copyright Reserved

133

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT - LONGITUDINAL

REGULATORY signs are placed at, or as close as possible to the point on the roadway from which their message is to apply

Certain regulatory signs, such as the NO OVERTAKING signs R214 and R215, NO PARKING sign R216 and NO STOPPING sign R217 have specific longitudinal conditions relating to their use.

Signs R214/R215 are applicable for a distance of 500 m beyond the sign, and should be repeated if the prohibition is required for a greater distance

Signs R216 and R217 are required to be repeated so that the distance between signs does not exceed 150 m when a prohibition is required for a greater distance



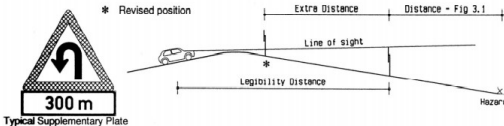
AnFab Consult Copyright Reserved

134

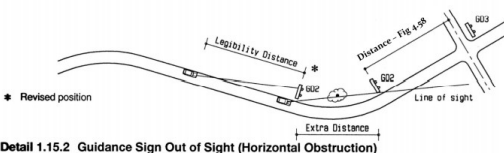
ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT - LONGITUDINAL



Detail 1.15.1 Warning Sign Out of Sight (Vertical Obstruction)



Detail 1.15.2 Guidance Sign Out of Sight (Horizontal Obstruction)



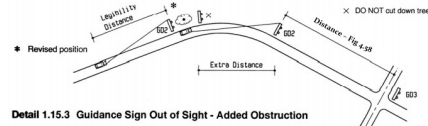
AnFab Consult Copyright Reserved

135

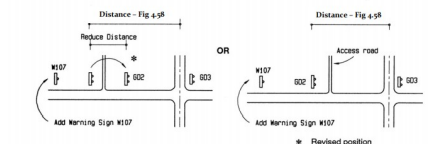
ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT - LONGITUDINAL



Detail 1.15.3 Guidance Sign Out of Sight - Added Obstruction



Detail 1.15.4 Closely Spaced Junctions

Fig 1.15 Typical Problems with Longitudinal Positioning of Road Signs



AnFab Consult Copyright Reserved

136

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHEVRON SIGN PLACEMENT - LONGITUDINAL

See at least 3 chevrons

Gentle Curve – Reduce speed by 1 tenth to 1 third

Curve radius (m)	Single module spacing (m)
45	5-8
60	8-15
150	15-25
300	25
600	25

80km/h

Advisory Speed Determined on trial runs

Positioning of Hazard Markers

AnFab Consult Copyright Reserved

137

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT - LONGITUDINAL

Letter Size (mm)	Minimum Sight Distance (m)
490	380
425	340
350	300
280	260
210	220
140	180
112	160

NOTES:

(1) As an alternative to repositioning signs the shaded area may be cleared or obstructions.

(2) The "Clear Sight Distance" values include the

legibility distance for the letter size PLUS 100m to allow for observation of the sign prior to reading.

Detail 1.16.2 Clear Line of Sight to Larger Guidance Signs

Fig 1.16 Further Aspects of Longitudinal Positioning of Road Signs

AnFab Consult Copyright Reserved

138

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – Lateral POSITIONING OF HAZARD MARKERS

PLAN (1) Overbridge (2) Underpass

W401 W402

Reference: VI 25.1 VI 25.1

Danger Plates/Delineator Plates

abutment pier GUARDRAIL

AnFab Consult Copyright Reserved

139

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

LATERAL SIGN PLACEMENT – DANGER PLATES AT BRIDGE ABUTMENTS

LYNNWOOD RD

W401 W402

300 1200 1200

Dangerous "V" Drain Guardrail required?

TYPICAL ELEVATION

AnFab Consult Copyright Reserved

140

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

**DANGER PLATE SIGN PLACEMENT –
VERTICAL CLEARANCE AND LATERAL**

TYPICAL INSTALLATION - MINIMUM SIZE W401 / W402

141

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

**CHEVRON SIGN PLACEMENT –
VERTICAL CLEARANCE AND LATERAL**

142

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – LATERAL AND VERTICAL

Usable Shoulder (or from kerb)

Dimension	Minimum (mm)	Preferred (mm)	Maximum (mm)	Remarks
A	1200	1500	2000	See note (8)
B	500	750		See "R" and note (9)
C	600(300)	2100	2500	See note (10)
D	2100	2500	3000	See note (11)
E	0	0	200	See Chapter 3
F	600	1200	2000	
G	800	1200	1600	
H			6000	See note (12)
J	2000	4000		See note (13)
K	1600	2000	2400	See note (12) and (14)
L	750			
M	5200	5700	6200	
N	1000	1500		See "R" and note (9)
P	50	1000		
R	600	1500		See "B", "N" and note (8)
T	1800		4200	See note (15)

143

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – LATERAL and VERTICAL

Detail 1.18.1 Regulatory and Warning Signs

144

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – LATERAL and VERTICAL

Detail 1.5.1
Regulatory and Warning Signs

Detail 1.5.2
Location and Route Marker Signs

Detail 1.5.3
Small Signs on Mast Supports

Detail 1.5.4
Advertising with STREET NAME

Dimension	Minimum (mm)	Preferred (mm)	Maximum (mm)
A	1200	1500	2000
B	500	750	-
C	800	2100	2500
D	2100	2500	3000
E	0	0	200

145

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – LATERAL and VERTICAL

Diagrammatic Sign

Gore Sign

Location and Route Marker Signs

Countdown Signs

Detail 1.18.2 Small to Medium Sized Guidance and Information Signs

146

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

SIGN PLACEMENT – LATERAL and VERTICAL

Usable Shoulder

Fill slope

Edge of Surface

Usable Shoulder

Tarred Surface

Ground Mounted Direction Signs - Class A and Class B Roads

Dimension	Minimum (mm)	Preferred (mm)	Maximum (mm)
H	-	-	6000
I	1500	2500	-
J	2500	4000	-
K	1800	2000	2400
L	1200	-	-

147

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

OVERHEAD SIGN PLACEMENT – LONGITUDINAL and VERTICAL

Class IV Lettering on class III background

M= Preferred 5700mm

4m min

Shoulder

Shoulder

148

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
SIGN PLACEMENT - **LONGITUDINAL** Setback

Lateral Setback of Countdown Signs to Avoid Obscuring of Exit Sign - GA3

149

Decision Sight Distance Module

Reading and Reaction Distances

Visible	Driver sees	Identifies hazard	Decides on action	Initiates action	Completes manoeuvre
Time 10.5sec. to 14.5sec.					
Distance 150m (50km/h) to 400m (100km/h)					

40km/h = 11m/s
 60km/h = 17 m/s
 80km/h = 22 m/s
 100km/h = 28 m/s
 120km/h = 33 m/s
 160km/h = 44 m/s

150

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 2 - REGULATORY SIGNS - INTRODUCTION

Regulatory signs are used to control the actions of road users in the sense that road users **shall take, or not take, specific actions** as indicated by such signs.

Failure to obey regulatory signs shall be **an offence** in terms of various Acts, Ordinances, Regulations or By - laws as may be in force from time to time.

151

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 2 - REGULATORY SIGNS - INTRODUCTION

Regulatory signs may be used to indicate a general law or regulation applicable in the interests of safety, such as a SPEED LIMIT, or in the interests of good traffic order and efficient road use such as a traffic signal, or a STOP or YIELD sign.

It is a basic philosophy of the regulatory signing system that whenever possible, signing should be POSITIVE, e.g. a regulatory sign should not have its critical primary message such as "STOP" or "NO ENTRY" modified so that it becomes applicable only to a portion of the approaching traffic.

152

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS - SIZES

circular signs – diameter

150 mm (for parking meters only)

300 mm (for cycle tracks only)


450mm

600mm

900mm

1200 mm

1600 mm



rectangular signs - H x W (ratio 4:3)

300 x 225 mm

450 x 340 mm


600 x 450 mm


800 x 600 mm

900 x 675 mm

1200 x 900 mm

1600 x 1200 mm





AnFab Consult Copyright Reserved

153

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 – PERMANENT REGULATORY SIGNS - SIZES

	Operating speed (km/h)			Stopping/ Parking	Overhead Signs
	100 or more	70 to 90	60		
Circular sign diameter (mm)	1200	900	600	450	1600 ⁽¹⁾
Rectangular sign - x W (mm)	1200 x 900	900 x 675	600 x 450	450 x 340	1600 x 1200 ⁽¹⁾

NOTES:

(1) When used on a HIGH VISIBILITY or DIAGRAMMATIC overhead sign a regulatory sign may be used with and without a distance or arrow. If the regulatory sign is a permanent COMMAND sign an additional contrasting semi-matt border shall be placed outside the normal white border of such signs. (See Volume 4, Chapter 2).


(2) If a temporary COMMAND sign is located overhead the inset black border shall become the same width as the normal white border on a permanent COMMAND sign. (See Volume 4, Chapter 2).

(3) Special reduced sizes are recommended for:

- (a) cyclist and pedestrian control (300 mm diameter and 300 x 225 mm);
- (b) KEEP LEFT signs R103 on traffic bollards (300 mm diameter);
- (c) repeater signs on parking meters (150 mm diameter);
- (d) special application STOP signs R1.1 (See Subsection 2.2.1 - 450 mm).

(4) See Table 2.6 for details of PAY TOLL sign R132 sizes.

TEMPORARY SIGNS SIZES LARGER THAN PERMANENT SIGNS – SEE SARTSM VOLUME 2 CHAPTER 13



AnFab Consult Copyright Reserved


154

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY CONTROL SIGNS


R1



References
R1, R1.1, R1.3 and R1.4
V1 2.2.1-2.2.5
V4 2.2.1 and 2.2.3


Stop

R1.1



Stop


R1.2



Ref.
V1 2.2.1
V4 2.2.2


Stop/Yield

R1.3




3 - Way Stop

R1.4



4 - Way Stop


R1.5A



References
V1 2.2.3
V4 2.2.1

Stop
(Stop/Go Control)


R1.5B



References
V1 2.2.3
V4 2.2.4

Go
(Stop/Go Control)


R2



References
V1 2.2.6
V4 2.2.5

Yield


R2.1



References
V1 2.2.7
V4 2.2.6


Yield to
Pedestrians

R2.2



References
V1 2.2.8
V4 2.2.7

Yield at
Mini Circle



AnFab Consult Copyright Reserved

155

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY CONTROL SIGNS

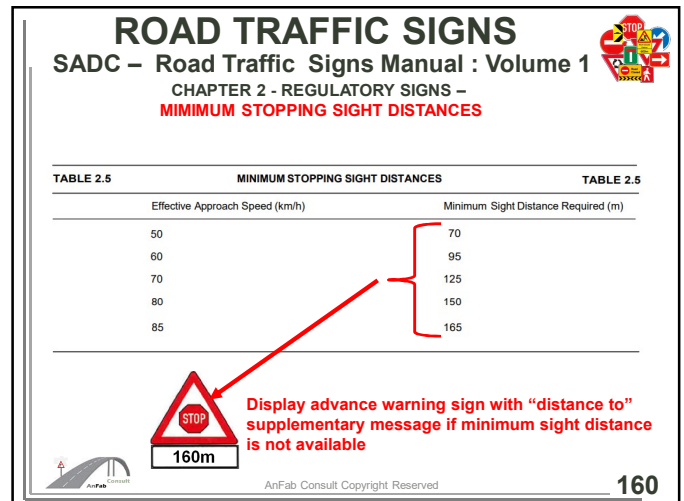
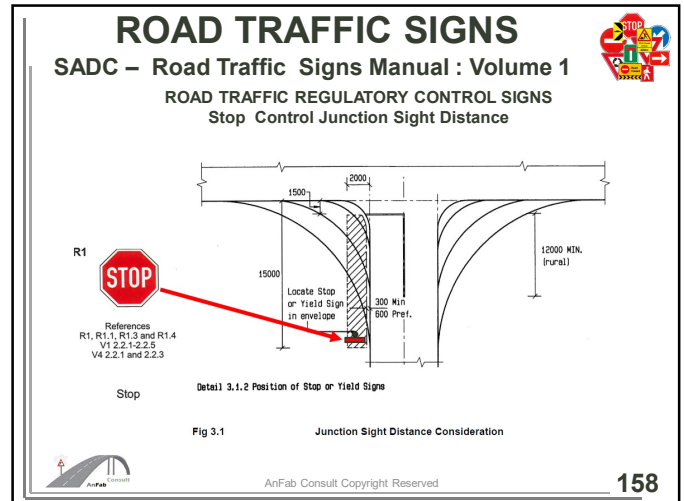
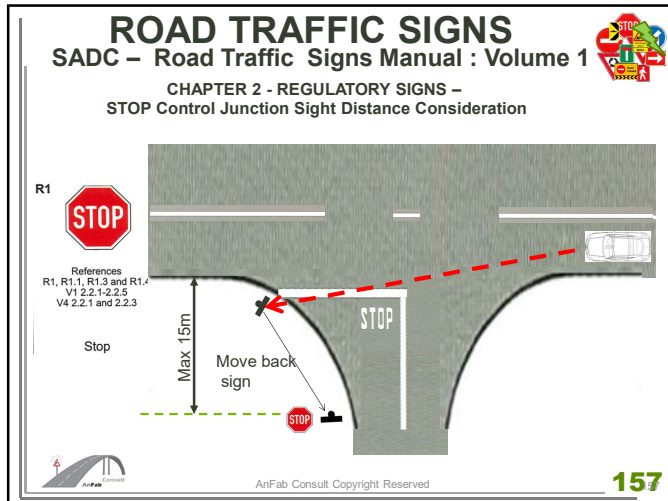
Stop sign display direction to by turned and not visible from priority road





AnFab Consult Copyright Reserved

156



165

166

167

168

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY CONTROL SIGNS –
NO ENTRY



Freeway Off-ramps shall be clearly signed



AnFab Consult Copyright Reserved

169

Regulatory Control Signs

2.2.5 No Entry

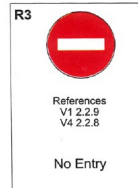
- 1 The NO ENTRY regulatory sign R3 is to indicate to the driver of a vehicle that the entry of all vehicular traffic is prohibited.
- 2 Sign R3 should be displayed to prohibit "wrong way" entry to a roadway when confusion may exist as to the direction of travel in a roadway or at a road junction. Sign R3 may be particularly relevant when one or more ONE-WAY ROADWAY signs R4.1, R4.2 or R4.3 are not adequate or appropriate, for whatever reason. Likely locations are:
 - (a) freeway off-ramp junctions with cross roads;
 - (b) one-way exit only roadways from bus termini or car parks;
 - (c) at junctions where one-way roadways become two-way roadways.
- 3 Consistent with the philosophy of giving a POSITIVE message rather than a NEGATIVE message, wherever possible, the POSITIVE regulatory ONE-WAY ROADWAY signs R4.1, R4.2 or R4.3 are preferred to the NEGATIVE regulatory sign R3 at junctions of one way roadways. However, in special situations where the background environment to signs R4.1 or R4.2 or R4.3 is busy and/or confusing, emphasis may be provided by using both sign types (see Subsections 2.1.1 and 2.2.5 and Volume 2).
- 4 NO ENTRY signs R3 should not be qualified by making them applicable only for a portion of the day, or to some

classes of vehicle. If a need exists to reserve access to a portion of roadway or to some off-street facility used by vehicular traffic to a specific class of vehicle or for a specific time of day, then an appropriate RESERVATION sign should be used. (See paragraph 2.1.1.6 and Section 2.5 and in particular Subsections 2.5.6 and 2.5.7.)

5 Care should be taken in using R3 signs to avoid the possibility of confusing drivers as to which roadway they apply to. The sign should normally be displayed on the left hand side, as near as possible to the beginning of the roadway to which entry is prohibited. Where additional emphasis is required, an additional sign should be displayed on the right hand side of the roadway. In some cases the signs may need to be sited a short distance into the roadway junction to improve visibility and it may often be desirable to orientate the sign to suit the direction of approach of traffic by mounting the sign at an angle to the edge of the road, kerb line or road reserve boundary.

6 An R3 sign may be included in the sign face of a map-type direction sign to indicate in advance that the junction ahead is with a one-way roadway and that movement is limited to only certain legs of the junction (see Section 2.8).

7 NO ENTRY sign R3 should be sized in accordance with the provisions of Table 2.4.



AnFab Consult Copyright Reserved

170

Roadworks Temporary Regulatory Control Signs



AnFab Consult Copyright Reserved

171

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY CONTROL SIGNS – ONE WAY

R4.1



References
V1 2.2.10
V4 2.2.9



AnFab Consult Copyright Reserved

R4.2



2 Choices

172

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY CONTROL SIGNS –
TWO WAY TO ONE WAY

One - Way
(Straight - On)

References
V1 2.2.10
V4 2.2.9

AnFab Consult Copyright Reserved **173**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY SIGNS –
COMMAND (Shall take -1 Choice Only)

Proceed Left Only **1 Choice only**

Turn Left Only

AnFab Consult Copyright Reserved **174**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **COMMAND** SIGNS

R101 50 Ref. V1 2.3.1 V4 2.3.1 TR101 50 Minimum Speed	R102 10t Ref. V1 2.3.2 V4 2.3.2 TR102 10t Vehicles Exceeding Mass Only	R103 Keep Left Ref. V1 2.3.3 V4 2.3.3 TR103 Keep Left	R104 Keep Right Ref. V1 2.3.4 V4 2.3.4 TR104 Keep Right	R105 Proceed Left Only Ref. V1 2.3.5 V4 2.3.5 TR105 Proceed Left Only
R106 Proceed Right Only Ref. V1 2.3.4 V4 2.3.6 TR106 Proceed Right Only	R107 Proceed Straight Only Ref. V1 2.3.4 V4 2.3.7 TR107 Proceed Straight Only	R108 Turn Left Ref. V1 2.3.5 V4 2.3.8 TR108 Turn Left	R109 Turn Right Ref. V1 2.3.5 V4 2.3.9 TR109 Turn Right	R110 Pedestrians Only Ref. V1 2.3.6 V4 2.3.10 TR110 Pedestrians Only

AnFab Consult Copyright Reserved **175**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 2 - REGULATORY SIGNS –
COMMAND - KEEP LEFT or KEEP RIGHT

R103
Keep Left
Ref. V1 2.3.3
V4 2.3.3
TR103
Keep Left

R104
Keep Right
Ref. V1 2.3.4
V4 2.3.4
TR104
Keep Right

- The KEEP LEFT and KEEP RIGHT regulatory signs R103 and R104 impose a **mandatory requirement** that the driver of a vehicle shall pass only to the left-hand side or the right-hand side, as indicated by an arrow of an obstacle in the roadway on which the sign has been placed. Signs R103 and R104 may be displayed as a SELECTIVE RESTRICTION sign in conjunction with a secondary message indicating a class of vehicle to which the mandatory requirement applies (see Section 2.7).
- Signs R103 and R104 must be displayed with extreme care, so that the arrow shall point downwards at an angle of approximately 45° towards the side on which traffic must pass. If the arrow is incorrectly aligned the meaning of the sign could be altered to that of the PROCEED LEFT ONLY, PROCEED RIGHT ONLY or PROCEED STRAIGHT ONLY signs R105, R106 and R107.
- The signs should normally be displayed with their lower edge 750 mm above the surface of the roadway. The height of display should, however, take into account the vertical alignment of the roadway. If the sign is located just beyond a crest curve it should be further elevated to improve visibility. Sign R103 is commonly used to indicate the beginning of a median island. In this case it may be mounted lower in combination with a DANGER PLATE hazard marker W402, on one post, to indicate that traffic must pass the sign to the left. The sign does not need to be repeated at subsequent openings in an otherwise continuous median island unless special conditions require the repetition of the message. Sign R103 may, for instance, be displayed on the end of a median island to the left of a NO ENTRY sign R3, when there is a risk of traffic entering the opposing roadway.
- Signs R103 and R104 SHALL NOT be displayed side by side on a channelising island which traffic may pass either to the left or right of, even if by doing so traffic will reach the same destination e.g. a pedestrian refuge in a one-way roadway. Such a device should be signed using SHARP CURVE CHIVRON hazard marker signs W406 and W405 mounted side by side or by DANGER PLATE hazard markers W401 and W402. (These contributions should preferably be manufactured from one piece of material).
- A KEEP RIGHT sign R104 will normally be reserved for use in special situations such as the start of a dedicated and separate portion of roadway, on the left side of the main roadway, such as a cycle lane or a bus lane. In this case general traffic is directed to pass to the right of a channelising island whilst cyclists or buses may be directed to the left.
- Temporary regulatory signs TR103 and TR104 are widely used at temporary roadworks sites to indicate temporary obstructions in the roadway or temporary changes in direction of the roadway, which traffic is required to negotiate. Signs TR103 and TR104 may be used in conjunction with TEMPORARY BARRICADE sign TW411 to demarcate roadway deviations. At the start of such deviations or at the beginning of a tapered reduction in roadway width it is recommended that two TR103 or TR104 signs, as appropriate, be mounted on the same pole, one above the other. The signs should also be elevated as high as is practical to improve visibility of this often critical point in a roadworks zone.
- Signs R103 and R104 should be sized in accordance with the provisions of Table 2.4.

AnFab Consult Copyright Reserved **176**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS – COMMAND – TEMPORARY KEEP LEFT or KEEP RIGHT




AnFab Consult Copyright Reserved

177


ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY SIGNS – COMMAND (1 CHOICE ONLY)



R108
Turn Left
Ref. V1 2.3.3
V1 2.3.5



R109
Turn Right
Ref. V1 2.3.3
V1 2.3.5

2.3.5 Turn Left and Turn Right

- The TURN LEFT and TURN RIGHT regulatory signs R108 and R109 impose a mandatory requirement that the driver of a vehicle shall proceed only in the direction indicated by the arrow on such sign, at the junction ahead if the sign applies only to certain period(s) of the day or to a specific class of vehicle this may be indicated by a secondary message below the primary sign. The latter application will classify the combined sign as a SELECTIVE RESTRICTION sign (see Section 2.7).
- Signs R108 and R109 should only be displayed in advance, on an approach to a junction where traffic from that approach may only enter one leg of the junction as indicated by the sign.
- If the mandatory requirement excludes one class of vehicle the movement which that class of vehicle shall undertake should be signed separately.
- Signs R108 and R109 may be used in combination with ONE-WAY ROADWAY signs R41 or R42 to control traffic movements at a junction. The signs should be sized in accordance with Table 2.4.
- The signs should be displayed on the left side of the roadway at least 15 m in advance of the junction. If the roadway is a one-way roadway a second sign may be located on the right side of the roadway. Care shall be taken to see that no property access lies between the sign and the junction.
- Temporary regulatory signs TR108 and TR109 may be used under the same circumstances as permanent TURN LEFT and TURN RIGHT regulatory signs when a temporary detour is required in an urban area, particularly within a business or central business district.


AnFab Consult Copyright Reserved

178


ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1


ROAD TRAFFIC REGULATORY SIGNS – COMMAND (1 CHOICE ONLY)



R105
Proceed Left Only
Ref. V1 2.3.1
V1 2.3.4



R106
Proceed Right Only
Ref. V1 2.3.1
V1 2.3.4



R107
Proceed Straight Only
Ref. V1 2.3.1
V1 2.3.4

2.3.4 Proceed Left Only, Proceed Right Only and Proceed Straight Only

- The PROCEED LEFT ONLY, PROCEED RIGHT ONLY and PROCEED STRAIGHT ONLY regulatory signs R105, R106 and R107 impose a mandatory requirement that the driver of a vehicle shall proceed only in the direction indicated by an arrow on such sign.
- Signs R105 and R106 should be displayed on the far side of a one-way roadway facing traffic wishing to enter the one-way roadway from the stem of a T-junction or from an exit from a site generating significant volumes of traffic.
- Sign R107 should be displayed at the side of a roadway in advance of a junction to indicate that traffic shall only proceed straight on.
- Temporary regulatory signs TR105, TR106 and TR107 may be used at temporary roadworks or at other temporary traffic control situations under the same circumstances as permanent PROCEED LEFT ONLY, PROCEED RIGHT ONLY or PROCEED STRAIGHT ONLY signs. Signs TR105 and TR106 may commonly be used at a roadworks site when a temporary road closure is required and movement is only permitted to move to the left OR right as the case may be. Sign TR107 and TR106 SHALL NOT be mounted together if traffic is permitted to move to the left AND right of the road closure i.e. into a two-way cross road in such a situation a T-JUNCTION CHEVRON hazard marker sign W409 should be used.
- Signs R105 and R106 or TR105 and TR106 should be located so that traffic obeying the signs turns in front of the signs. The signs should be sized in accordance with Table 2.4.

AnFab Consult Copyright Reserved

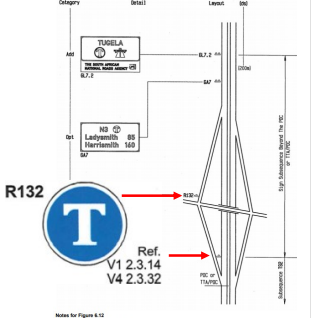
179

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS – COMMAND – PAY TOLL

The PAYTOLL regulatory sign R132 imposes a mandatory requirement that drivers of vehicles shall only proceed on a public road designated as a toll road if they are able to pay the toll charge and that they **shall pay the toll** charge at the toll plaza or plazas concerned.



Ref. V1 2.3.14
V4 2.3.32

AnFab Consult Copyright Reserved

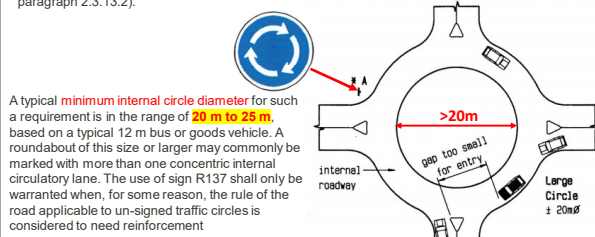
180

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS – COMMAND – R137 ROUNDABOUT

The ROUNDABOUT regulatory sign R137 imposes a mandatory requirement that drivers entering a roundabout shall turn to the left and shall travel round the roundabout in a clockwise direction, and it imposes a mandatory requirement that drivers entering a roundabout shall yield right-of-way to traffic approaching from the right, within the roundabout, where such traffic is so close as to constitute a danger or potential danger. A roundabout shall be a traffic circle with a large internal island diameter (see paragraph 2.3.13.2).



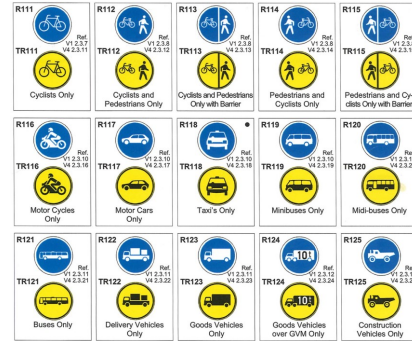
AnFab Consult Copyright Reserved

181

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY COMMAND SIGNS



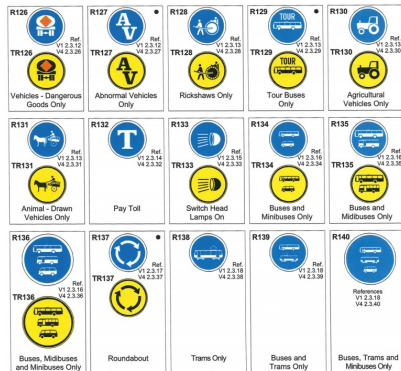
AnFab Consult Copyright Reserved

182

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY COMMAND SIGNS



AnFab Consult Copyright Reserved

183

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY PROHIBITION SIGNS



AnFab Consult Copyright Reserved

184

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS –

PROHIBITION WITH ADVANCE WARNING – HEIGHT RESTRICTION

3.4.16 Height Restricted

- The HEIGHT RESTRICTED warning sign W320 is to warn road users that the clearance of:
 - a height gauge located ahead of a railway crossing over which overhead electrical power cables are installed; or
 - an overhead structure; is restricted.
- Sign W320 should be displayed in advance of a height gauge or overhead structure when the clearance over any portion of the roadway is less than 4.7 m. The clearance height shown should be the same as shown on the HEIGHT LIMIT sign R204, which sign shall be displayed on the overhead structure flanked by two OVER HEAD DANGER PLATES signs W415. A typical sign arrangement for a height restricted site is given in Volume 2.
- Sign W320 should be located in advance of the height restriction in accordance with the design speed of the road. The sign shall be of a size as indicated in Table 3.1. Sign W320 may, however, be located some distance from the hazard and in such circumstances should be supplemented by a distance information plate, giving the distance to the hazard (see Section 3.5).

Fig 3.9 Height Width or Other Restriction Ahead

189

AnFab Consult Copyright Reserved

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS –

PROHIBITION – LOW STRUCTURE INSPECTIONS

190

AnFab Consult Copyright Reserved

Height Limit Regulatory Prohibition Signs

Typical Height Limit Signs, Danger Plates and Roadmaking – Permanent Cond

191

AnFab Consult Copyright Reserved

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 2 - REGULATORY SIGNS –

PROHIBITION – R208 NO UNAUTHORISED VEHICLES

The NO UNAUTHORISED VEHICLES regulatory sign R208 imposes a mandatory requirement that drivers of unauthorized vehicles shall NOT proceed beyond such sign.

Sign R208 should be used to indicate that a roadway or entrance way is closed to general traffic. In the event of prosecution the onus shall rest with the driver of a vehicle to prove that he has authority from the responsible authority to proceed beyond signs R208


This authorisation should be indicated by the display of an appropriate identity/authorisation disc or other device. Authorised traffic may be permitted to proceed beyond the sign in order to gain access to private property or a work site.

192

AnFab Consult Copyright Reserved

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **PROHIBITION** SIGNS


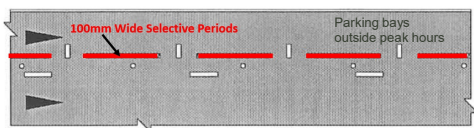
R216 TR216  No Parking Ref. V1 2.4.11 V4 2.4.18	R217 TR217  No Stopping Ref. V1 2.4.12 V4 2.4.19	R218 TR218  No Pedestrians Ref. V1 2.4.13 V4 2.4.20	R219 TR219  No Cyclists Ref. V1 2.4.14 V4 2.4.21	R220 TR220  No Cyclists and Pedestrians Ref. V1 2.4.15 V4 2.4.22
R221/TR221 Numbers not allocated				
R222 TR222  No Motor Cycles Ref. V1 2.4.17 V4 2.4.23	R223 TR223  No Motor Cars Ref. V1 2.4.17 V4 2.4.24	R224 TR224  No Taxi's Ref. V1 2.4.17 V4 2.4.25	R225 TR225  No Minibuses Ref. V1 2.4.17 V4 2.4.25	

193

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY SIGNS - **PROHIBITION NO STOPPING**

A NO STOPPING LINE regulatory marking RM12 imposes a mandatory requirement that drivers of vehicles: (a) shall not stop their vehicles adjacent to such line; (b) **where such line is a broken line, shall not stop their vehicles adjacent to such line during the time period indicated by an accompanying road sign.**





SELECTIVE PERIODS


194

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY SIGNS - **PROHIBITION NO STOPPING**



24 hours –
150mm wide



RM12.1 **RED 150mm** No Stopping Area

RM4.1 **Yellow 150mm** Left Edge Line

195

ROAD TRAFFIC SIGNS


SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **PROHIBITION** SIGNS

R226 TR226  No Midi-Buses Ref. V1 2.4.18 V4 2.4.27	R227 TR227  No Buses Ref. V1 2.4.18 V4 2.4.28	R228 TR228  No Delivery Vehicles Ref. V1 2.4.18 V4 2.4.29	R229 TR229  No Goods Vehicles Ref. V1 2.4.18 V4 2.4.30	R230 TR230  No Goods Vehicles over G.V.M Ref. V1 2.4.19 V4 2.4.31
R231 TR231  No Construction Vehicles Ref. V1 2.4.19 V4 2.4.32	R232 TR232  No Vehicles Carrying Dangerous Goods Ref. V1 2.4.19 V4 2.4.33	R233 TR233  No Abnormal Vehicles Ref. V1 2.4.19 V4 2.4.34	R234 TR234  No Rickshaws Ref. V1 2.4.20 V4 2.4.35	R235 TR235  No Tour Buses Ref. V1 2.4.20 V4 2.4.36

196

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY SIGNS-
PROHIBITION NO ABNORMAL VEHICLES




NATIONAL ROAD TRAFFIC REGULATIONS, 2000

Part III – DIMENSION OF NORMAL VEHICLES

Regulation 221. Overall Length of Vehicle : **22m**

Regulation 223. Overall Width of Vehicle : **2,6m**

Regulation 224. Overall Height of Vehicle : **4,65m**




AnFab Consult Copyright Reserved

197

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY SIGNS –
PROHIBITION NO PEDESTRIANS




The NO PEDESTRIANS regulatory sign imposes a mandatory requirement that **pedestrians shall NOT proceed beyond such sign.**

Sign R218 should be displayed **at the beginning** of, and at entrances to, **a roadway, lane or path** to indicate that pedestrians are prohibited from using that roadway, lane or path.

Sign R218 may be used to indicate to pedestrians that they should **not cross a roadway** at the point indicated by the sign. In the latter case it is recommended that **additional signs** be displayed to guide pedestrians to a safe crossing point.

If sign R218 is used in this manner at a junction, the **junction should not be marked with PEDESTRIAN CROSSING LINE** marking RTM3 at that point.








AnFab Consult Copyright Reserved

198

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **PROHIBITION** SIGNS

<p>R236</p>  <p>Ref. V1 2.4.20 V4 2.4.37</p> <p>TR236</p>  <p>No Agricultural Vehicles</p>	<p>R237</p>  <p>Ref. V1 2.4.20 V4 2.4.38</p> <p>TR237</p>  <p>No Animal-Drawn Vehicles</p>	<p>R238</p>  <p>Ref. V1 2.4.21 V4 2.4.39</p> <p>TR238</p>  <p>No Horses and Riders</p>	<p>R239</p>  <p>Ref. V1 2.4.21 V4 2.4.40</p> <p>TR239</p>  <p>Width Limit</p>	<p>R240</p>  <p>Ref. V1 2.4.21 V4 2.4.41</p> <p>TR240</p>  <p>No Towed Vehicles</p>
<p>R241</p>  <p>Ref. V1 2.4.21 V4 2.4.42</p> <p>TR241</p>  <p>No Hawkers</p>				



AnFab Consult Copyright Reserved

199

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **Reservation** SIGNS

<p>R301</p>  <p>References V1 2.5.1 V4 2.5.1</p> <p>Bus</p>	<p>TR301</p>  <p>References V1 2.5.1 V4 2.5.1</p> <p>Bus</p>	<p>R302</p>  <p>References V1 2.5.2 V4 2.5.2</p> <p>Bus Lane</p>	<p>TR302</p>  <p>References V1 2.5.2 V4 2.5.2</p> <p>Bus Lane</p>	<p>R303</p>  <p>References V1 2.5.3 V4 2.5.3</p> <p>Begin Bus Lane</p>	<p>TR303</p>  <p>References V1 2.5.3 V4 2.5.3</p> <p>Begin Bus Lane</p>
<p>R304</p>  <p>References V1 2.5.3 V4 2.5.3</p> <p>Bicycle Lane</p>	<p>TR304</p>  <p>References V1 2.5.3 V4 2.5.3</p> <p>Bicycle Lane</p>	<p>R305-P</p>  <p>References V1 2.5.4 V4 2.5.4</p> <p>Limited Parking</p>	<p>TR305-P</p>  <p>References V1 2.5.4 V4 2.5.4</p> <p>Limited Parking</p>	<p>R307</p>  <p>References V1 2.5.7 V4 2.5.7</p> <p>Motor Cycle</p>	<p>TR307</p>  <p>References V1 2.5.7 V4 2.5.7</p> <p>Motor Cycle</p>
<p>R308</p>  <p>References V1 2.5.7 V4 2.5.8</p> <p>Motor Car</p>	<p>TR308</p>  <p>References V1 2.5.7 V4 2.5.8</p> <p>Motor Car</p>	<p>R309-P</p>  <p>References V1 2.5.9 V4 2.5.9</p> <p>Taxi</p>	<p>TR309-P</p>  <p>References V1 2.5.9 V4 2.5.9</p> <p>Taxi</p>	<p>R310</p>  <p>References V1 2.5.10 V4 2.5.10</p> <p>Minibus</p>	<p>TR310</p>  <p>References V1 2.5.10 V4 2.5.10</p> <p>Minibus</p>



AnFab Consult Copyright Reserved

200

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **Reservation** SIGNS

R310-P References V1 2.5.13 V4 2.5.10 Minibus Parking	TR310-P References V1 2.5.13 V4 2.5.11 Midi-Bus	R311 References V1 2.5.13 V4 2.5.11 Midi-Bus	TR311 References V1 2.5.13 V4 2.5.11 Midi-Bus	R311-P References V1 2.5.13 V4 2.5.11 Midi-Bus	TR311-P References V1 2.5.13 V4 2.5.11 Midi-Bus	R312 References V1 2.5.7 V4 2.5.12 Delivery Vehicle	TR312 References V1 2.5.7 V4 2.5.12 Delivery Vehicle	R312-P References V1 2.5.7 V4 2.5.12 Delivery Vehicle	TR312-P References V1 2.5.7 V4 2.5.12 Delivery Vehicle
R313 References V1 2.5.7 V4 2.5.13 Goods Vehicle	TR313 References V1 2.5.7 V4 2.5.13 Goods Vehicle	R313-P References V1 2.5.7 V4 2.5.13 Goods Vehicle	TR313-P References V1 2.5.7 V4 2.5.13 Goods Vehicle	R314 References V1 2.5.8 V4 2.5.14 Goods Vehicle over Indicated G.V.M	TR314 References V1 2.5.8 V4 2.5.14 Goods Vehicle over Indicated G.V.M	R314-P References V1 2.5.8 V4 2.5.14 Goods Vehicle over Indicated G.V.M	TR314-P References V1 2.5.8 V4 2.5.14 Goods Vehicle over Indicated G.V.M	R315 References V1 2.5.8 V4 2.5.15 Construction Vehicle	TR315 References V1 2.5.8 V4 2.5.15 Construction Vehicle

201

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **Reservation** SIGNS

R315-P References V1 2.5.9 V4 2.5.15 Construction Vehicle Parking	TR315-P References V1 2.5.9 V4 2.5.15 Construction Vehicle Parking	R316 References V1 2.5.9 V4 2.5.16 Vehicle Dangerous Goods	TR316 References V1 2.5.9 V4 2.5.16 Vehicle Dangerous Goods	R316-P References V1 2.5.9 V4 2.5.16 Vehicle Dangerous Goods	TR316-P References V1 2.5.9 V4 2.5.16 Vehicle Dangerous Goods	R317 References V1 2.5.9 V4 2.5.17 Abnormal Vehicle	TR317 References V1 2.5.9 V4 2.5.17 Abnormal Vehicle	R317-P References V1 2.5.9 V4 2.5.17 Abnormal Vehicle	TR317-P References V1 2.5.9 V4 2.5.17 Abnormal Vehicle
R318 References V1 2.5.9 V4 2.5.18 Rickshaw	TR318 References V1 2.5.9 V4 2.5.18 Rickshaw	R318-P References V1 2.5.9 V4 2.5.18 Rickshaw	TR318-P References V1 2.5.9 V4 2.5.18 Rickshaw	R319 References V1 2.5.9 V4 2.5.19 Tour Bus	TR319 References V1 2.5.9 V4 2.5.19 Tour Bus	R319-P References V1 2.5.9 V4 2.5.19 Tour Bus	TR319-P References V1 2.5.9 V4 2.5.19 Tour Bus	R320 References V1 2.5.14 V4 2.5.20 High Occupancy Vehicle	TR320 References V1 2.5.14 V4 2.5.20 High Occupancy Vehicle
R320-P References V1 2.5.14 V4 2.5.20 High Occupancy Vehicle	TR320-P References V1 2.5.14 V4 2.5.20 High Occupancy Vehicle	R321 References V1 2.5.9 V4 2.5.21 Emergency Vehicle	TR321 References V1 2.5.9 V4 2.5.21 Emergency Vehicle	R321-P References V1 2.5.9 V4 2.5.21 Emergency Vehicle	TR321-P References V1 2.5.9 V4 2.5.21 Emergency Vehicle	R322 References V1 2.5.9 V4 2.5.22 Police Vehicle	TR322 References V1 2.5.9 V4 2.5.22 Police Vehicle	R322-P References V1 2.5.9 V4 2.5.22 Police Vehicle	TR322-P References V1 2.5.9 V4 2.5.22 Police Vehicle

202

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **Reservation** SIGNS

R323 References V1 2.5.9 V4 2.5.23 Disabled Persons Vehicle	TR323 References V1 2.5.9 V4 2.5.23 Disabled Persons Vehicle	R323-P References V1 2.5.9 V4 2.5.23 Disabled Persons Vehicle	TR323-P References V1 2.5.9 V4 2.5.23 Disabled Persons Vehicle	R324 References V1 2.5.10 V4 2.5.24 Authorized Vehicle	TR324 References V1 2.5.10 V4 2.5.24 Authorized Vehicle	R324-P References V1 2.5.10 V4 2.5.24 Authorized Vehicle	TR324-P References V1 2.5.10 V4 2.5.24 Authorized Vehicle	R325 References V1 2.5.21 V4 2.5.25 Bus Stop	TR325 References V1 2.5.21 V4 2.5.25 Bus Stop
R326 References V1 2.5.21 V4 2.5.26 Minibus Stop	TR326 References V1 2.5.21 V4 2.5.26 Minibus Stop	R327 References V1 2.5.14 V4 2.5.27 Bus and Minibus	TR327 References V1 2.5.14 V4 2.5.27 Bus and Minibus	R327-P References V1 2.5.14 V4 2.5.27 Bus and Minibus	TR327-P References V1 2.5.14 V4 2.5.27 Bus and Minibus	R328 References V1 2.5.14 V4 2.5.28 Bus and Minibus Lane	TR328 References V1 2.5.14 V4 2.5.28 Bus and Minibus Lane	R329 References V1 2.5.14 V4 2.5.29 Bus and Minibus Lane	TR329 References V1 2.5.14 V4 2.5.29 Bus and Minibus Lane

203

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **Comprehensive** SIGNS

R401 References V1 2.6.1 V4 2.6.1 Dual Carriageway Freeway Begins	R402 References V1 2.6.2 V4 2.6.2 Single Carriageway Freeway Begins	R403 References V1 2.6.3 V4 2.6.3 Woonerf
---------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------	------------------------------------------------------------------

Conditional Regulatory Signs

204

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY COMPREHENSIVE SIGNS –
R401 DUAL CARRIAGEWAY BEGINS



The DUAL CARRIAGEWAY FREEWAY BEGINS regulatory sign R401 indicates to drivers of vehicles that a dual carriageway freeway begins and that specific legislation becomes applicable on the section of public road beyond such sign.

The special provisions relating to freeways which are brought into force by sign R401 are covered in legislation. The following items are a summary of the provisions of this legislation. For full details the legislation must be consulted. (a) No person shall operate on a freeway: (i) a vehicle drawn by an animal; (ii) a pedal cycle; (iii) a motorcycle with a cylinder capacity not exceeding 50 cm³ (c.c.) or which is propelled by electric power; (v) a motor tricycle; (v) a vehicle with a mass not greater than 230 kg and specially designed, constructed or adapted for the use of a person suffering from a physical defect or disability; or (vi) a tractor;



AnFab Consult Copyright Reserved

205

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY COMPREHENSIVE SIGNS –
R401 DUAL CARRIAGEWAY BEGINS



No person shall : (i) be on a freeway on foot except : (1) within an area reserved for the stopping or parking of vehicles by an appropriate road traffic sign (this provision could include rest areas within the freeway reservation); (2) for a cause beyond the control of that person; or

(ii) leave or allow an animal to be on a freeway, except in or on a motor vehicle or within an area reserved for the stopping or parking of vehicles by an appropriate road traffic sign, OR leave an animal in a place where it may stray onto a freeway;

(iii) stop a vehicle on a freeway, except: (1) in compliance with a road traffic sign or a direction given by a traffic officer; (2) within an area reserved for the stopping or parking of vehicles by an appropriate road traffic sign; (3) for a cause beyond the control of that person; or

(iv) give a hand signal when driving a motor vehicle on a freeway, except for a cause beyond the control of the driver;



AnFab Consult Copyright Reserved

206

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY COMPREHENSIVE SIGNS –
R401 DUAL CARRIAGEWAY BEGINS



(v) cause a vehicle on a freeway to travel in reverse, except:

- (1) in compliance with a direction given by a traffic officer;
- (2) within an area reserved for the stopping or parking of vehicles by an appropriate road traffic sign; or
- (3) for a cause beyond the control of that person;

(vi) cross the median between carriageways of a divided freeway, and/or cause a vehicle to execute a U-turn on a freeway except :

- (1) in compliance with a direction given by a traffic officer; or
- (2) for a cause beyond the control of that person;

(vi) cause a vehicle to travel on a roadway shoulder of a freeway in order to pass a slower moving vehicle



AnFab Consult Copyright Reserved

207

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY COMPREHENSIVE SIGNS –
R401 DUAL CARRIAGEWAY BEGINS



The SINGLE CARRIAGEWAY FREEWAY BEGINS regulatory sign R401 indicates to drivers of vehicles that a single carriageway freeway begins and that specific legislation becomes applicable on the section of public road beyond such sign. This has the effect that drivers shall comply with a comprehensive range of regulations given in the Road Traffic Act, specific to the use of single carriageway freeways.

The provisions of paragraph 2.6.1.4 shall apply mutatis mutandis to the use of sign R402, with the exception of paragraph 2.6.1.4 (b)(vi) which shall have the requirement for this class of freeway that no person shall cause a vehicle to execute a U-turn



AnFab Consult Copyright Reserved

208

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY COMPREHENSIVE SIGNS –
WOONERF

1 The WOONERF regulatory sign R403 indicates comprehensive requirements that drivers of vehicles shall:

- (a) **not enter** the area driving a vehicle with a gross vehicle mass **exceeding 3 500 kg** and/or more than 10 seats for passengers, except for local access or delivery;
- (b) **yield right of way to pedestrians, and children** who may be in the roadway;
- (c) **observe a general speed limit of 30 km/h within the area unless another speed limit is indicated by a road sign**; and (c) not enter the area by vehicle and drive through the area to exit at another point or the same point without breaking their journey. 2 Sign R403 should be displayed on the left side of all points of access to all residential areas declared for the purposes of traffic control as "WOONERF". 3 Sign R403 should be sized in accordance with Table 2.4 in Section 2.1



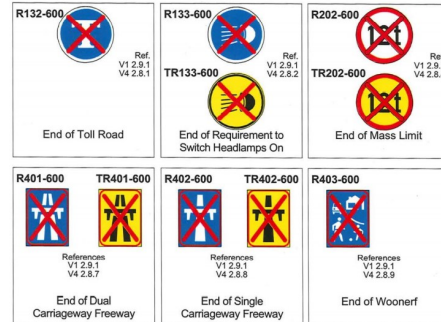
AnFab Consult Copyright Reserved

209

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

REGULATORY SELECTIVE RESTRICTION SIGNS –
DE-RESTRICTIONS



AnFab Consult Copyright Reserved

210

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY SIGN **SIZES**

Full dimensional details of all regulatory signs are given in Volume 4 of the Manual. Standard sizes covered in Volume 4 are:

- (a) circular signs - diameter
- 150 mm (for parking meters only)
 - 300 mm (for cycle tracks only)
 - 450mm
 - 600mm
 - 900mm
 - 1200 mm
 - 1600 mm
- (b) rectangular signs - H x W (ratio 4:3)
- 300 x 225 mm
 - 450 x 340 mm
 - 600 x 450 mm
 - 800 x 600 mm
 - 900 x 675 mm
 - 1200 x 900 mm
 - 1600 x 1200 mm



AnFab Consult Copyright Reserved

211

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC REGULATORY SIGN **SIZES PER SPEED**

TABLE 2.4		MINIMUM REGULATORY SIGN SIZES				TABLE 2.4
		Operating speed (km/h)			Stopping/ Parking	Overhead Signs
		100 or more	70 to 90	60		
Circular sign diameter	(mm)	1200	900	600	450	1600 (1)
Rectangular sign- X W	(mm)	1200 x 900	900 x 675	600 x 450	450 x 340	1600 x 1200 (1)



AnFab Consult Copyright Reserved

212

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **SUPPLEMENTARY SIGN EXAMPLES 1 OF 2**

COLOUR CODE

Primary Sign

Secondary Sign

213

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **SUPPLEMENTARY SIGN EXAMPLES 2 OF 2**

ACTION-LIMIT

ACTION-OBJECT

OBJECT-LIMIT

LIMIT-ACTION

214

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **COMBINATION SIGNS**

Regulatory Signs with Supplementary Plates

Regulatory Signs on High Visibility Backgrounds

215

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC REGULATORY **COMBINATION SIGNS**

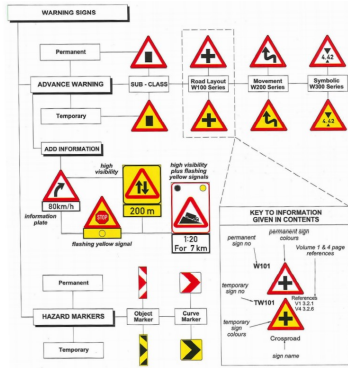
with Flashing Yellow Signals - SS3

Multiple Combinations

216

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS



217

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –
INTRODUCTION

Warning signs are used to alert drivers to hazardous or potentially hazardous conditions, on or adjacent to the roadway. Warning signs indicate a need for extra caution by road users and may require a reduction in speed or other manoeuvre, in the interest of their safety and that of other drivers, pedestrians and animals.

Adequate warning signs can greatly assist road safety however, their use should be restricted to a minimum consistent with safety. The use of warning signs under normal conditions where a driver can be expected to see and appreciate the potential hazard should be avoided. This brings road traffic signs in general into disrepute and detracts from their effectiveness.

218

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **REACTION TIME AVAILABLE**

TABLE 3.1 ADVANCE WARNING SIGN LOCATION AND SIZE TABLE 3.1

Operating speed (km/h)	Location distance from hazard (m)(2)	Recommended size (mm)
120	330 (400)	1500
100	240 (320)	1500
80	160 (218)	1200
60	120 (160)	900

NOTES:

(1) Hazard marker warning signs are located at the hazard - see Section 3.5 for sizes.

(2) If advance warning signs are provided on gravel roads the distances in brackets are recommended.

219

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **VISIBILITY DISTANCE(Reading Time)**

TABLE 3.2 VISIBILITY DISTANCE TO WARNING SIGN TABLE 3.2

Operating speed (km/h)	Clear visibility distance (m)
120	120
100	100
80	80
60	60

220

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – SIGN SIZES

Standard sizes covered in Volume 4 are:

(a) triangular signs- nominal side length :

- 900 mm
- 1200 mm
- 1500 mm
- 1800 mm

(b) triangular signs displayed on a HIGH VISIBILITY background

nominal side length:

- 900 mm
- 1235mm
- 1834 mm.


221

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –


W112 SHARP JUNCTIONS




Warning

Guidance


GS401




GS402



GS403



GS404



RECOMMENDED FOR ON-RAMP FREEWAY LANE MERGE APPLICATIONS

222


ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

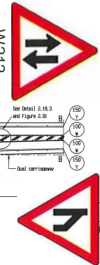
CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –

DUAL ROADWAY START AND END

End W117



Start W119



GM4.1 – Information Arrow











R103 KEEP LEFT Type RD

223

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – ROAD LAYOUT SERIES 100

<p>W101</p>  <p>References: V1 3.2.1, V4 3.2.1</p> <p>Crossroad</p>	<p>W102</p>  <p>References: V1 3.2.1, V4 3.2.2</p> <p>Crossroad on Priority Road</p>	<p>W103</p>  <p>References: V1 3.2.1, V4 3.2.3</p> <p>Priority Crossroad on Non-Priority Road</p>	<p>W104</p>  <p>References: V1 3.2.1, V4 3.2.4</p> <p>T-Junction</p>	<p>W105</p>  <p>References: V1 3.2.1, V4 3.2.5</p> <p>Skew T-Junction (Right)</p>
<p>W106</p>  <p>References: V1 3.2.1, V4 3.2.6</p> <p>Skew T-Junction (Left)</p>	<p>W107</p>  <p>References: V1 3.2.2, V4 3.2.7</p> <p>Side Road Junction (Left)</p>	<p>W108</p>  <p>References: V1 3.2.2, V4 3.2.8</p> <p>Side Road Junction (Right)</p>	<p>W109</p>  <p>References: V1 3.2.2, V4 3.2.9</p> <p>Staggered Junctions (Right - Left)</p>	<p>W110</p>  <p>References: V1 3.2.2, V4 3.2.10</p> <p>Staggered Junctions (Left - Right)</p>

224

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – ROAD LAYOUT SERIES 100

 TW111 References: V1 3.2.3, V4 3.2.11 Sharp Junction (Half Left)	 TW112 References: V1 3.2.3, V4 3.2.12 Sharp Junction (Left)	 TW113 References: V1 3.2.3, V4 3.2.13 Sharp Junction (Half Right)	 TW114 References: V1 3.2.3, V4 3.2.14 Sharp Junction (Right)	 TW115 References: V1 3.2.3, V4 3.2.15 Y - Junction
 TW116 References: V1 3.2.4, V4 3.2.16 End of Dual Roadway (To Right)	 TW117 References: V1 3.2.4, V4 3.2.17 End of Dual Roadway (Straight on)	 TW118 References: V1 3.2.4, V4 3.2.18 Beginning of Dual Roadway (Straight on)	 TW119 References: V1 3.2.4, V4 3.2.19 Beginning of Dual Roadway (To Left)	

225

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – TRAFFIC MOVEMENT SERIES 200

 TW201 References: V1 3.3.1, V4 3.3.1 Traffic Circle	 TW202 References: V1 3.3.1, V4 3.3.2 Gentle Curve (Right)	 TW203 References: V1 3.3.1, V4 3.3.3 Gentle Curve (Left)	 TW204 References: V1 3.3.2, V4 3.3.4 Sharp Curve (Right)	 TW205 References: V1 3.3.2, V4 3.3.5 Sharp Curve (Left)
 TW206 References: V1 3.3.2, V4 3.3.6 Hairpin Bend (Right)	 TW207 References: V1 3.3.2, V4 3.3.7 Hairpin Bend (Left)	 TW208 References: V1 3.3.3, V4 3.3.8 Winding Road (Right - Left)	 TW209 References: V1 3.3.3, V4 3.3.9 Winding Road (Left - Right)	 TW210 References: V1 3.3.4, V4 3.3.10 Combined Curves (Right - Left)

226

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –
W202/W203 – GENTLE CURVE

Optional*
See at least 3

The GENTLE CURVE warning signs W202 and W203 are to warn road users of a gentle curve ahead to right or to left.

These signs should be displayed in advance of an obscured curve that can only be negotiated comfortably by **reducing speed by one tenth to one third** of the operating speed of traffic travelling on the preceding straight.

The **comfortable safe speed should be determined by actual trial runs**. Figure 3.1 should be used For dimensions ref. Vol. 4 page 3.3.2 3.3.3 to determine the advance distance for location of the sign.

The **advisory safe speed may be indicated** by displaying a supplementary information plate below the sign on the same post (see Section 3.6).

227

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –
W204/W205 – SHARP CURVE

Optional*
3X chevron on a single plate

The GENTLE CURVE warning signs W204 and W205 are to warn road users of a SHARP curve ahead to right or to left.

These signs should be displayed in advance of an obscured curve that can only be negotiated comfortably by **reducing speed by MORE THAN one third** of the operating speed of traffic travelling on the preceding straight.

The **comfortable safe speed should be determined by actual trial runs**. Figure 3.1 should be used For dimensions ref. Vol. 4 page 3.3.2 3.3.3 to determine the advance distance for location of the sign.

The **advisory safe speed may be indicated** by displaying a supplementary information plate below the sign on the same post (see Section 3.6).

228

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –
W206 to W211 – CURVES



The **HAIRPIN BEND** warning signs W206 and W207 are to warn road users of a sharp bend ahead which results in an almost complete change of direction to the right or to the left. Reducing speed by **more than half** of the operating speed.



The **WINDING ROAD** warning signs W208 and W209 are to warn road users of a series of curves in the road ahead. Speed should be reduced by **one tenth to one third** of the operating speed.



The **COMBINED CURVES** warning signs W210 and W211 are to warn road users of a combination of two sharp curves in opposite directions. Speed should be **reduced by more than one third** of the operating speed of traffic travelling on the preceding straight.



AnFab Consult Copyright Reserved

229

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 3 - ROAD TRAFFIC WARNING SIGNS –
W204/W205 – SHARP CURVE

Optional*
3X chevron on a single plate



AnFab Consult Copyright Reserved

230

The **GENTLE CURVE** warning signs W204 and W205 are to warn road users of a SHARP curve ahead to right or to left.

These signs should be displayed in advance of an obscured curve that can only be negotiated comfortably by **reducing speed by MORE THAN one third** of the operating speed of traffic travelling on the preceding straight.

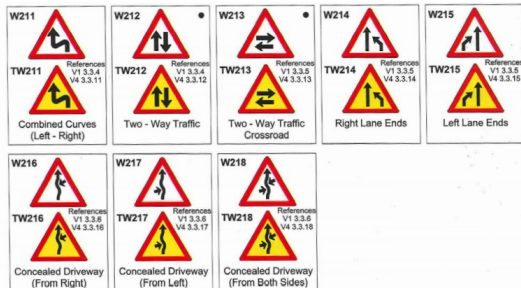
The **comfortable safe speed should be determined by actual trial runs**. Figure 3.1 should be used For dimensions ref. Vol. 4 page 3.3.2 3.3.3 to determine the advance distance for location of the sign.

The **advisory safe speed may be indicated** by displaying a supplementary information plate below the sign on the same post (see Section 3.6).

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**



AnFab Consult Copyright Reserved

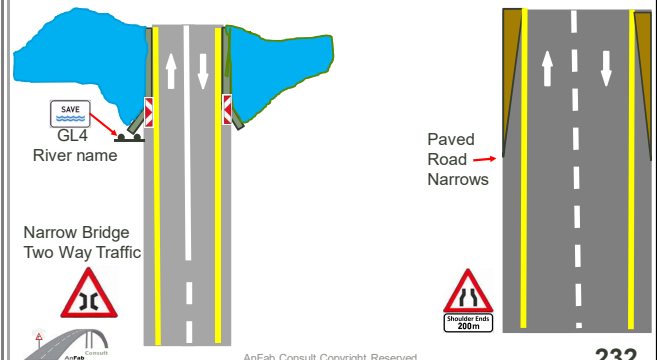
231

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

WARNING SIGNS –

LEFT LANE ENDS VS ROAD NARROWS




AnFab Consult Copyright Reserved

232

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
WARNING SIGNS –
NARROW BRIDGE

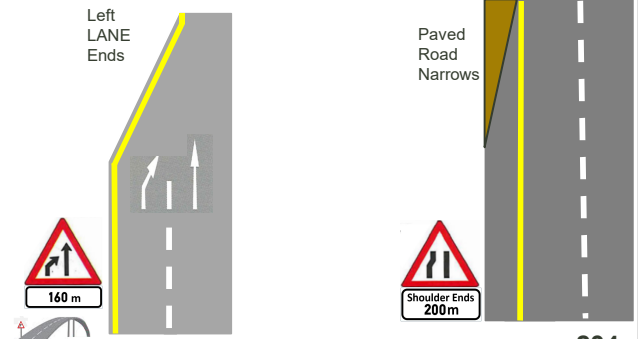


Narrow Bridge Two Way Traffic
AnFab Consult Copyright Reserved

233

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
WARNING SIGNS –
LEFT LANE ENDS VS ROAD NARROWS



AnFab Consult Copyright Reserved

234

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**

 W311 References: V1 3.4.8, V4 3.4.11	 W312 References: V1 3.4.9, V4 3.4.12	 W313 References: V1 3.4.10, V4 3.4.13	 W314 References: V1 3.4.11, V4 3.4.14	 W315 References: V1 3.4.12, V4 3.4.15
 W316 References: V1 3.4.13, V4 3.4.16	 W317 References: V1 3.4.14, V4 3.4.17	 W318 References: V1 3.4.15, V4 3.4.18	 W319 References: V1 3.4.16, V4 3.4.19	 W320 References: V1 3.4.17, V4 3.4.20
 W321 References: V1 3.4.18, V4 3.4.21	 W322 References: V1 3.4.19, V4 3.4.22	 W323 References: V1 3.4.20, V4 3.4.23	 W324 References: V1 3.4.21, V4 3.4.24	 W325 References: V1 3.4.22, V4 3.4.25

AnFab Consult Copyright Reserved

235

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **STEEP DESCENT**

W322

W323

+

- The STEEP DESCENT warning sign W322 is to warn road users of a steep downhill section of roadway ahead which may, particularly for heavy vehicles, constitute a hazard; and the STEEP ASCENT warning sign W323 is to warn road users of a steep uphill section of roadway ahead.
- Sign W322 should be displayed in advance of a steep downhill section of roadway with a grade of 5 per cent or more and a length greater than the distances given in Table 3.3.
- The use of sign W323 for a gradient of less than 5% may be considered if the gradient continues for a distance of over 2 km. Such combinations of length and degree of grade may constitute a potential hazard to heavy vehicles.
- Sign W323 should be located in advance of the start of the downhill grade in accordance with the provisions of Table 3.1 or Figure 3.1. In the case of conditions as described in (3.4.18.3) the sign should be located further from the start of the downhill grade to allow provision of diagrammatic signs such as "ENGAGE LOW GEAR" sign G505 (see Section 4.10). The signs should be "Y" metres apart (where "Y" is the operating speed of normal traffic excluding heavy vehicles in km/h).
- Sign W324 may be displayed in advance of an uphill grade where the nature of the road alignment is such that the steep uphill grade is not obvious to approaching traffic.
- Sign W324 should be located in accordance with the provisions of Table 3.1 or Figure 3.1.
- It is recommended that SUPPLEMENTARY PLATE information sign IN11 be used with signs W323 and W324 to indicate the length and/or steepness of a gradient, particularly when the gradient is regularly used by heavy vehicles. SUPPLEMENTARY PLATE sign IN11.2, showing the length of the gradient in the form "For 8 km" or "4.4 km", showing the slope of the gradient in the form "1:1.12" are most appropriate. Under certain conditions both messages may be combined in one SUPPLEMENTARY PLATE sign. (See Volume 4, Chapter 9 for dimensional details).
- Temporary warning signs TW323 and TW324 may be used under the same circumstances as the permanent STEEP DESCENT and STEEP ASCENT warning signs when steep downhill or uphill sections of roadway occur on roadworks detours.

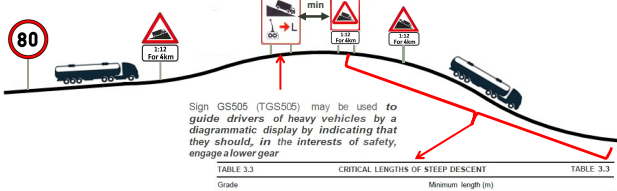
AnFab Consult Copyright Reserved

236

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – STEEP ASCENT AND DESCENT



Sign GS505 (TGS505) may be used to guide drivers of heavy vehicles by a diagrammatic display by indicating that they should, in the interests of safety, engage a lower gear

Grade	Minimum length (m)
5% (1)(2)	1000
7%	300
8%	250
10%	150
Steeper	90

Steep Ascent and Descent Signage


NOTES:
 (1) Grades of this order need not normally be signed unless there are significant numbers of heavy vehicles using the section of roadway.
 (2) The minimum length of grade given presumes a curving alignment which will add to the potential hazard of such grades for heavy vehicles.


237

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – W331 UNEVEN ROADWAY or POTHOLED





“or potholed”

- The UNEVEN ROADWAY warning sign W331 is to warn road users that there is a depression or ridge in the roadway or that the road surface is generally uneven or potholed.
- Sign W331 should be displayed in advance of a section of uneven or potholed roadway which is hazardous and requires a reduction in speed. Such a condition would normally indicate the start of the failure of the road. This sign should not be used to warn motorists of speed humps in the roadway.
- This sign should be located in advance of the hazard at a distance dependent on the operating speed of approaching traffic. Figure 3.1 should be used to determine the appropriate distance.
- A temporary warning sign TW331 should be used for an uneven or potholed roadway. The sign may be supplemented by an advisory speed plate, or a distance plate and/or repeated at suitable intervals (see Section 3.6).
- GENERAL WARNING sign TW339 with a supplementary information plate with the text “Potholes” may be used as a short term alternative (see Subsection 3.4.32 on page 3.4.33).

238

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – W332 SPEED HUMPS and SPEED HUMP DANGER PLATES





The SPEEDHUMP DANGER PLATES warning signs W416 and W417 is to warn road users of a speed hump in the roadway which require a reduction in speed to less than 30km/h.

W416 and W417 (approved by road signs sub-committee)

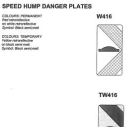
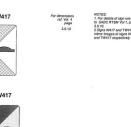
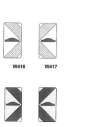
- The SPEED HUMPS warning sign W332 is to warn road users of speed humps on the roadway ahead which require a reduction in speed.
- Sign W332 should be displayed when speed control humps have been installed to reduce traffic speed in various environments. UNEVEN ROADWAY warning sign W331 should not be used to warn traffic of speed humps.
- The sign should be located in advance of the hazard at a distance dependent on the operating speed or, in the case of a speed hump immediately after a turn, the average speed at which the hazard can be negotiated safely. If a number of speed humps are installed the sign should preferably be located within 30m of the first hump which should be placed within 50 m of the start of a section of roadway so that drivers encounter the hump at low speed. The sign should preferably be supplemented by an appropriate information plate indicating a “distance for”, a recommended speed or some general message.
- Temporary warning sign TW332 may be used when speed humps are used to reduce speeds at roadworks sites.

239

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1&4

ROAD TRAFFIC HAZARD MARKERS WARNING SIGNS – W416&W417 SPEED HUMP DANGER PLATES

Approved by the road signs sub-committee

HAZARD MARKER 3.5.10 HAZARD MARKER 3.5.12

SPEED HUMP DANGER PLATES

W416 W417

TW416 TW417

3.5.10 Speed Hump Danger Plates

- The SPEEDHUMP DANGER PLATES W416 and W417 are to warn road users of speed humps on the roadway ahead which require a reduction in speed to less than 30km/h.
- The signs W416 and W417 should be displayed in advance of a speed hump. The sign should be placed within 30m of the first hump which should be placed within 50 m of the start of a section of roadway so that drivers encounter the hump at low speed. The sign should preferably be supplemented by an appropriate information plate indicating a “distance for”, a recommended speed or some general message.
- The SPEEDHUMP warning sign W332 should not be used to warn traffic of speed humps.
- The sign should be located in advance of the hazard at a distance dependent on the operating speed or, in the case of a speed hump immediately after a turn, the average speed at which the hazard can be negotiated safely. If a number of speed humps are installed the sign should preferably be located within 30m of the first hump which should be placed within 50 m of the start of a section of roadway so that drivers encounter the hump at low speed. The sign should preferably be supplemented by an appropriate information plate indicating a “distance for”, a recommended speed or some general message.
- Temporary warning sign TW332 may be used when speed humps are used to reduce speeds at roadworks sites.

240

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**

 W326 Reference: V1 3.4.12 V4 3.4.26 TW326 Reference: V1 3.4.12 V4 3.4.27 Narrow Bridge	 W327 Reference: V1 3.4.12 V4 3.4.27 TW327 Reference: V1 3.4.12 V4 3.4.27 One Vehicle Width Structure	 W328 Reference: V1 3.4.13 V4 3.4.28 TW328 Reference: V1 3.4.13 V4 3.4.28 Road Narrows Both Sides	 W329 Reference: V1 3.4.13 V4 3.4.29 TW329 Reference: V1 3.4.13 V4 3.4.29 Road Narrows From Right Side Only	 W330 Reference: V1 3.4.13 V4 3.4.30 TW330 Reference: V1 3.4.13 V4 3.4.30 Road Narrows From Left Side Only
 W331 Reference: V1 3.4.14 V4 3.4.31 TW331 Reference: V1 3.4.14 V4 3.4.31 Uneven Roadway	 W332 Reference: V1 3.4.14 V4 3.4.32 TW332 Reference: V1 3.4.14 V4 3.4.32 Speed Humps	 W333 Reference: V1 3.4.15 V4 3.4.33 TW333 Reference: V1 3.4.15 V4 3.4.33 Slippery Road	 W334 Reference: V1 3.4.15 V4 3.4.34 TW334 Reference: V1 3.4.15 V4 3.4.34 Falling Rocks (From Right)	 W335 Reference: V1 3.4.15 V4 3.4.35 TW335 Reference: V1 3.4.15 V4 3.4.35 Falling Rocks (From Left)

241

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – **SYMBOLS SERIES 300**

 TW336 Reference: V1 3.4.16 V4 3.4.36 Roadworks	 TW337 Reference: V1 3.4.17 V4 3.4.37 Grader Working	 TW338 Reference: V1 3.4.17 V4 3.4.38 Loose Stones	 TW339 Reference: V1 3.4.18 V4 3.4.39 General Warning	 TW340 Reference: V1 3.4.19 V4 3.4.40 Surface Slip (Right)
 TW341 Reference: V1 3.4.19 V4 3.4.41 Surface Slip (Left)	 TW342 Reference: V1 3.4.20 V4 3.4.42 Soft Shoulder	 TW343 Reference: V1 3.4.21 V4 3.4.43 "Stop/Go" Control Ahead	 TW344 Reference: V1 3.4.22 V4 3.4.44 Construction Vehicles Crossing (From Left)	 TW345 Reference: V1 3.4.23 V4 3.4.45 Construction Vehicles Crossing (From Right)
 W346 Reference: V1 3.4.24 V4 3.4.46 Emergency Flashing Light	 TW347 Reference: V1 3.4.25 V4 3.4.47 Temporary Police Flashing Light	 W348 Reference: V1 3.4.26 V4 3.4.48 Jetty Edge or River Bank	 TW349 Reference: V1 3.4.27 V4 3.4.49 Crossroads	 TW350 Reference: V1 3.4.28 V4 3.4.50 Drift

242

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – **SYMBOL SERIES 300**

 W351 Reference: V1 3.4.29 V4 3.4.51 Low Flying Aircraft	 W352 Reference: V1 3.4.30 V4 3.4.52 Agricultural Vehicles	 TW353 Reference: V1 3.4.31 V4 3.4.53 Accident	 W354 Reference: V1 3.4.32 V4 3.4.54 Reduced Visibility	 W355 Reference: V1 3.4.33 V4 3.4.55 Congestion
 W356 Reference: V1 3.4.34 V4 3.4.56 Horse and Rider	 W357 Reference: V1 3.4.35 V4 3.4.57 Elephant	 W358 Reference: V1 3.4.36 V4 3.4.58 Warthog	 W359 Reference: V1 3.4.37 V4 3.4.59 Hippo	 W360 Reference: V1 3.4.38 V4 3.4.60 Width Restriction
 TW361 Reference: V1 3.4.39 V4 3.4.61 Electrical Shock	 W362 Reference: V1 3.4.40 V4 3.4.62 Tram	 TW363 Reference: V1 3.4.41 V4 3.4.63 Gravel Road Ends		

243

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1


ROAD TRAFFIC WARNING SIGNS – **HAZARD MARKERS SERIES 400**

 TW401 Reference: V1 3.5.1 V4 3.5.1 Danger Plate/ Delineator Plate	 TW402 Reference: V1 3.5.1 V4 3.5.1 Danger Plate/ Delineator Plate	 W403 Reference: V1 3.5.2 V4 3.5.2 Railway Crossing	 W404 Reference: V1 3.5.2 V4 3.5.2 Railway Crossing (more than one line)
 TW405 Reference: V1 3.5.3 V4 3.5.3 Sharp Curve Chevron (Single)	 TW406 Reference: V1 3.5.3 V4 3.5.3 Sharp Curve Chevron (Single)	 TW407 Reference: V1 3.5.3 V4 3.5.3 Sharp Curve Chevron (Triple)	 TW408 Reference: V1 3.5.3 V4 3.5.4 Sharp Curve Chevron (Triple)

244

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING HAZARD MARKER SIGNS –
W401 AND W402



The **DANGER PLATE** warning signs **W401** and **W402** and the **DELINEATOR PLATE** temporary warning signs **TW401** and **TW402** are to warn road users of an obstruction or temporary obstruction, in the roadway, or alteration or temporary alteration, in the roadway alignment to the right or left side of the roadway.

Signs W401 and W402 should be displayed at all hazardous obstructions that occur within the shoulder or verge of a roadway such as bridge abutments, culvert head-walls or posts without guardrail protection. Sign W401 should be used on the left side of the roadway so that traffic passes to the right of the plate. Sign W402 should be used on the right side of the roadway so that traffic passes to the left of the plate.

DIMENSIONS (mm)

	W	4W	2W	a	b	c
Under 60km/h	150	600	300	15	120	270
Rural and Freeway	200	800	400	20	160	360
Bridge Abutments and Balustrades	250	1000	500	20	210	450
	300	1200	600	20	260	540


Class III Retro-reflective sheeting recommended

245


ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **HAZARD MARKERS SERIES 400**

W409




TW409




T-Junction/Chevron

W410




TW410




Dead End / Road Closed Chevron

W411




TW411




Broom/ Barricade

W412




TW412




Traffic Signals Out of Order

W413

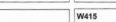


TW413




Gore Plate

W414




TW414




Gore Chevron

W415



TW415



Overhead Danger Plate


246

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**

Advance Warning Signs with Supplementary Plates


W202



IN11.1

Advisory Speed


TW336



TIN11.2

Distance "For"


W302



IN11.3

Distance "To"


TW339



TIN11.4

Text Message

W102



IN11.5

Symbolic Message


247

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**


Advance Warning Signs in High Visibility Backgrounds

TW338-WA




Refer V4 3.1.4
Type WA

W332-WB




Refer V4 3.1.5
Type WB

W212-WC




Refer V4 3.1.6
Type WC

W205 + W318 - WD



Refer V4 3.1.7
Type WD

TR201 -RC + TW231-WC



Refer V4 3.1.8
Type RC + WC


248

ROAD TRAFFIC SIGNS


SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC WARNING SIGNS – **TRAFFIC MOVEMENT SERIES 200**


with Flashing Yellow Signals - SS3




Single Signal
TW353 - SS3




Double Signal
W204 - SS3



Four Signals
W320 - SS3




Type WE
W322 - WE - SS3




Type WF
TW336 - WF - SS3

Multiple Combinations




W102 + IN11.5 + SS3




W302 - WA + IN11.5 + IN11.3

Refer V1 3.6.1 - 3.6.8 and 6.7.3 - 6.7.5
V4 3.1.4 - 3.1.6 and 9.2.7 - 9.2.12



TW339 + TIN11.4 + TIN11.2



W322 - WF + IN11.2 + SS3





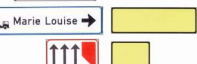



249

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 4 – GUIDANCE SIGNS

G

Location	Sign
Route Marker	
Direction	
Freeway Direction (Class A1)	
Freeway Direction (Class A2)	
Tourism Direction	
Local Direction	
Diagrammatic	
Pedestrian	









250

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 4 – GUIDANCE SIGNS

G

Location	Sign
Route Marker	
Direction	
Freeway Direction (Class A1)	
Freeway Direction (Class A2)	
Tourism Direction	
Local Direction	
Diagrammatic	
Pedestrian	

251

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

CHAPTER 4 – GUIDANCE SIGNS - **LOCATION**

G

<p>GL1</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">MHLAMBANYATSI RD</div> <p style="font-size: small;">Refer V1 4.6.2 V4 4.2.1 Street Name</p>	<p>GL2</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">BOTSWELELO</div> <p style="font-size: small;">Refer V1 4.6.5 V4 4.2.5 Suburb Name</p>	<p>GL3</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">PORT LOUIS</div> <p style="font-size: small;">Refer V1 4.6.7 V4 4.2.6 Town Name</p>
<p>GL4</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">SAVE</div> <p style="font-size: small;">Refer V1 4.6.7 V4 4.2.8 River Name</p>	<p>GL5</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">LESOTHO BORDER</div> <p style="font-size: small;">Refer V1 4.6.8 V4 4.2.9 National/Provincial Border</p>	<p>GL6</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">TROPIC OF CAPRICORN</div> <p style="font-size: small;">Refer V1 4.6.9 V4 4.2.11 Geographical Location</p>
<p>GL7</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">TSITSIKAMMA</div> <p style="font-size: small;">Refer V1 4.6.9 V4 4.2.13 Route Name</p>	<p>GL8 - RSA</p> <div style="border: 1px solid black; padding: 5px; text-align: center;">E B CLOETE</div> <p style="font-size: small;">Refer V1 4.6.9 V4 4.2.14 Interchange Name</p>	

252

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS - LOCATION

GLS-1

Refer V4 4.4.1
River Name

GLS-2

Refer V4 4.4.2
Toll Route Name

GLS-3

Refer V4 4.4.2
End of Toll Route

GLS-4

Refer V4 4.4.3
Freeway Name (Class A1)

GLS-5

Refer V4 4.4.3
Freeway Name (Class A2)

GLS-6

Refer V4 4.4.4
Interchange Name

GLS-7

Refer V4 4.4.4
Conservancy Area

253

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – ROUTE MARKERS

GE1

Freeway
Refer V1 4.7.3

GE2

Freeway
Refer V1 4.7.3

GE3

Non-Freeway
V4 4.3.1/4.3.4

GE4

Non-Freeway
V4 4.3.1/4.3.4

GE5

Freeway
Refer V1 4.7.4

GE6

Freeway
Refer V1 4.7.4

GE7

Non-Freeway
V4 4.3.5/4.3.8

GE8

Non-Freeway
V4 4.3.5/4.3.8

GE9

Advance Transport Trailblazer
Refer V1 4.7.5
V4 4.3.9

GE10

Transport Trailblazer
Refer V1 4.7.5
V4 4.3.10

GE11

Map-Type Advance Trailblazer
Refer V1 4.7.6
V4 4.3.11

254

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – ROUTE MARKERS

GE12

Confirmation

GE12.1

Direction (Right)

GE12.2

Direction (Left)

GE12.3

Advance Direction (Right)

GE12.4

Advance Direction (Left)

GE12.5

Straight-On

GE13

Confirmation

GE13.1

Direction (Right)

GE13.2

Direction (Left)

GE13.3

Advance Direction (Right)

GE13.4

Advance Direction (Left)

GE13.5

Straight-On

255

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – TOURISM ROUTE MARKERS

GE18

Confirmation

GE18.1

Direction (Right)

GE18.2

Direction (Left)

GE18.3

Advance Direction (Right)

GE18.4

Advance Direction (Left)

GE18.5

Straight-On

GE18.E

Route End

GE18

Confirmation

GE18.1

Direction (Right)

GE18.2

Direction (Left)

GE18.3

Advance Direction (Right)

GE18.4

Advance Direction (Left)

256

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – DIRECTION

GD1

Refer: V1 4.8.6
V4 5.2.1 to 5.2.10 and 5.2.34 to 5.2.41

Stack-Type Advance Direction

GD2

Refer: V1 4.8.9
V4 5.2.11 to 5.2.15 and 5.2.34 to 5.2.41

Stack-Type Advance Direction

257

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – DIRECTION

GD1/GD2

Refer: V1 4.8.12
V4 5.2.16 to 5.2.18 and 5.2.34 to 5.2.41

Stack-Type Composite Direction

GD3

Refer: V1 4.8.14
V4 5.2.23

Confirmation

TGD2-D

Refer: V1 4.8.11 V4 5.2.20

Detour Direction

GD4

Refer: V1 4.8.10 V4 5.2.24

Fingerboard

GD5

Refer: V1 4.8.17
V4 5.2.28

Map-Type Advance Direction Crossroad

GD6

Refer: V1 4.8.10 V4 5.2.24

Fingerboard

258

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – DIRECTION

GD7

Refer: V1 4.8.17
V4 5.2.28

Map-Type Advance Direction Staggered Junction

GD8

Refer: V1 4.8.17 V4 5.2.30

Map-Type Advance Direction Traffic Circle

GD9

Refer: V1 4.8.17
V4 5.2.20

Map-Type Advance Direction Recommended Route

GD10

Refer: V1 4.8.19
V4 5.3.1

Overhead-Downward Arrows Exit Direction

GD11

Refer: V1 4.8.19
V4 5.3.3

Overhead-Downward Arrows Exit Direction

GD12

Refer: V1 4.8.19 V4 5.3.5

Overhead-Upward Arrows Advance Exit Through Direction

259

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – DIRECTION

GD13

Refer: V1 4.8.20 V4 5.3.7

Overhead-Upward Arrows Advance Exit (High Speed)

GD14

Refer: V1 4.8.20 V4 5.3.8

Overhead-Upward Arrows Advance Exit (Low Speed)

GD15

Refer: V1 4.8.20 V4 5.3.9

Overhead-Upward Arrows Straight-On/Through Direction

GD16

Refer: V1 4.8.20 V4 5.3.10

Overhead-Upward Arrows Exit Direction (Slow Speed)

GD17

Refer: V1 4.8.20 V4 5.3.11

Overhead-Upward Arrows Exit Direction (High Speed)

GD18

Refer: V1 4.8.20 V4 5.3.11

Overhead-Upward Arrows Exit Direction (High Speed)

260

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – **FREEWAY DIRECTION**

GA1

Refer V1 4.9.17 V4 6.2.1
Pre-Advance Exit Direction

GA2

Refer V1 4.9.18 V4 6.2.2 to 6.2.6
Advance Exit Direction

GA2/3

Refer V1 4.9.20 V4 6.2.7/6.2.8
Supplementary Exit Direction

GA3

Refer V1 4.9.21 V4 6.2.9 to 6.2.12
Exit Direction

261

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – **GORE EXIT**

GA4

GA4(E)

TGA4(E)

TGA4(V)

Gore Exit

262

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
CHAPTER 4 – GUIDANCE SIGNS – **GD3 CONFIRMATION**

GA7

Refer V1 4.9.27 V4 6.2.21
Confirmation

Maximum 3 destinations* allowed

Only display latest approved destinations as published in SADC Volume 1 Chapter 8 – Navigational aids – 8.6 National Variants Tables 8.12 to 8.19

263

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC GUIDANCE SIGNS –
CHAPTER 8 - FAMILIAR DESTINATIONS

TABLE 8.12 LEVEL 1 (FAMILIAR) ORIENTATION POINTS- RSA								
Eastern Cape	Free State	Gauteng	KwaZulu Natal	Mpumalanga	Northern Cape	Limpopo	North West	Western Cape
King Williams Town	Bloemfontein	Johannesburg	Durban	Nelspruit	Kimberley	Pietersburg	Mafikeng	Cape Town
East London		Pretoria	Pietermaritzburg					
Port Elizabeth								

264

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



ROAD TRAFFIC GUIDANCE SIGNS – CHAPTER 8 CONTROL DESTINATIONS

TABLE 8.13	LEVEL 2 (CONTROL) ORIENTATION POINTS- RSA								TABLE 8.13
Eastern Cape	Free State	Gauteng	KwaZulu/ Natal	Mpumalanga	Northern Cape	Limpopo	North West	Western Cape	
Alfred North Cradock	Bethlehem	Alberton	Amanzimtoti	Bethal	De Aar	Loke Trichardt	Koekedorp	Beaufort West	
Botshabelo	Benoni	Boksburg	Ballito	Ermedlo	Kuruman	Phalaborwa	Lichtenburg	Beilville	
Grahamstown	Ficksburg	Brakpan	Dundee	Middelburg	Prinsia	Potgietersrus	Potchefstroom	Caledon	
Middelburg	Harlem	Carletonville	Empaneni	Secunda	Springbok	Thoboyandou	Rustenburg	George	
Queenstown	Kroonstad	Centurion	Estcourt	Standerton			Vryburg	Malmesbury	
Uitenhage	Mangaung	Germiston	Graytown	Witbank				Oudshoorn	
Umtata	Heidelberg	Hawick	Kokstad					Sidaberg	
	Odenburg	Kempston Park	Kruger					Vredendal	
	Parys	Lady Smith						Worcester	
	Phuthaditjaba	Nigel							
	Sasburg	Randburg							
	Thabong	Randfontein							
	Virginia	Roads							
	Welkom	Pheliso							
		Port Edward							
		Port Shepstone							
		Queensburgh							
		Richards Bay							
		Stanger							
		Tongaat							
		Umtata							
		Verulam							
		Vryheid							
		Westville							



AnFab Consult Copyright Reserved

265

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



ROAD TRAFFIC GUIDANCE SIGNS – CHAPTER 8 SERVICE DESTINATIONS*

TABLE 8.14	LEVEL 3 (SERVICE) ORIENTATION POINTS- RSA								TABLE 8.14
Eastern Cape	Free State	Gauteng	KwaZulu/ Natal	Mpumalanga	Northern Cape	Limpopo	North West	Western Cape	
Burgersdorp	Bainville	Akasia	Glencoe	Balfour	Coleburg	Ellisras	Brits	Breda	
Butterworth	Frankfort	Bedfordview	Huhtuwa	Barberton	Douglas	Giyani	Christiana	Ceres	
Fort Beaufort	Heilbron	Bekkersdal	Kingsburgh	Carolina	Keimoes	Messina	Fochville	Claarwater	
Hamansdorp	Heinemann	Bronkhorstspuit	Kloof	Delmas	Postmansburg	Naboomspruit	Harbespoort	Groenou	
Port Alfred	Ladybrand	Daveyton	Marburg	Evander	Uptington	Namagale	Jan Kempdorp	Hermanus	
Stutterheim	Reitz	Edenville	Margate	Groblersdal	Warrenton	Nylstroom	Orkney	Krysta	
Uitenhage	Sereikal	Evaton	Muze	Kruss		Seshego	Schweizer-Reneke	Mooreburg	
	Thaba Nchu	Kagiso	Mooi River	Leandra		Thabazimbi	Stiffort	Haar	
	Kwa-Thema	Nongoma	Lydenburg	Marble Hall		Tzaneen	Verlindorp	Pietberg	
	Meyerton	Scottburgh	Utrecht	Piet Relief		Wambatha	Zerust	Pietberg Bay	
	Midrand	Umdut	Volksrust	White River				Riversdale	
	Modderfontein	Sebokeng	Uvongo	Winkelspruit				Robertson	
	Tembisa	Visitors						Somersdorp	
	Westonaria							Stellenbosch	
								Strand	
								Swellendam	
								Veldrif	
								Wellington	

*See also SADC Volume 1 - Chapter 8.6 Tables 8.15 to 8.18
for all service destination orientation points



AnFab Consult Copyright Reserved

266

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



ROAD TRAFFIC GUIDANCE SIGNS – CHAPTER 4

GE1 (N12) ↑	GE2 (N17) ↑	GE3 (25) ↑	GE4 (R300) ↑	GE5 (N1) ↑	GE6 (M4) ↑	GE7 (25) ↑	GE8 (M9) ↑
Freeway	Non-Freeway			Freeway	Non-Freeway		
Refer V1 4.7.3	V4 4.3.1/4.3.4			Refer V1 4.7.4	V4 4.3.5/4.3.8		
Advance Trailblazer				Trailblazer			
GE9 Refer V1 4.7.5 V4 4.3.9	GE10 Refer V1 4.7.5 V4 4.3.10	GE11 Refer V1 4.7.6 V4 4.3.11					
Advance Transport Trailblazer	Transport Trailblazer	Map-Type Advance Trailblazer					



AnFab Consult Copyright Reserved

267

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1



ROAD TRAFFIC GUIDANCE SIGNS – GB - CROSSROAD FREEWAY DIRECTION SIGNS

GB1 Refer V1 4.9.31 V4 6.3.1/6.3.2	124 SANDTON M60 Kelvin N3 Pretoria N3 Germiston	GB2 Refer V1 4.9.32 V4 6.3.3	N3 Germiston
	Cross-Road Advance Direction		Near Side On-Ramp Direction
GB3 Refer V1 4.9.32 V4 6.3.4	N3 (N1) Pretoria	GB4 Refer V1 4.9.33 V4 6.3.5	N3 (N1) Pretoria
	Far Side On-Ramp Advance Direction		Far Side On-Ramp Direction



AnFab Consult Copyright Reserved

268

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC GUIDANCE SIGNS – GC – OVERHEAD FREEWAY DIRECTION SIGNS

GC1

Refer V1 4.9.17 V4 6.4.1/6.4.2

Pre-Advance Exit Direction

GC2D

Refer V1 4.9.35 V4 6.4.3/6.4.4

Advance Exit Direction

GC3D

Refer V1 4.9.35 V4 6.4.5/6.4.6

Through (Straight-On) Direction

GC4D

136 PRETORIA

Refer V1 4.9.35 V4 6.4.7

Shared Exit Lane

75 ROODEPOORT

Refer V1 4.9.35 V4 6.4.7

Exclusive Exit Lane

Exit Direction

Downward Pointing Arrow System

269

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC GUIDANCE SIGNS – GC – OVERHEAD FREEWAY DIRECTION SIGNS

GC1

Refer V1 4.9.17 V4 6.4.1/6.4.2

Pre-Advance Exit Direction

GC2U

149 AMANZIMTOTI

Refer V1 4.9.37 V4 6.4.8 to 6.4.11

Access Interchange

108A

Refer V1 4.9.37 V4 6.4.8 to 6.4.11

Systems Interchange

Advance Exit Direction

Upward Pointing Arrow System

270

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC GUIDANCE SIGNS – GC – OVERHEAD CROSSROAD FREEWAY DIRECTION SIGNS

GC3U

Refer V1 4.9.38 V4 6.4.12 to 6.4.15

Systems Interchange

Supplementary Advance Exit/Through Direction

GC3U

Refer V1 4.9.38 V4 6.4.12 to 6.4.15

Access Interchange

Supplementary Advance Exit/Through Direction

GC4U

136 PRETORIA

Refer V1 4.9.40 V4 6.4.16 to 6.4.19

Access Interchange

R28 Krugersdorp

Refer V1 4.9.40 V4 6.4.16 to 6.4.19

Systems Interchange - Off-Ramp Split

Exit Direction

Upward Pointing Arrow System

271

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1

ROAD TRAFFIC GUIDANCE SIGNS – GC – OVERHEAD CROSSROAD FREEWAY DIRECTION SIGNS

GC5U

Refer V1 4.9.41 V4 6.4.20/6.4.21

Systems Interchange C-D Road

Advance Off-Ramp Direction

GC6U

Refer V1 4.9.42 V4 6.4.22/6.4.23

Main Line and C-D Road

Through Direction

GC7U

Refer V1 4.9.43 V4 6.4.24

Systems Interchange 1st Exit from C-D Road

C-D Road Exit Direction

GC8U

Refer V1 4.9.43 V4 6.4.25

Systems Interchange 2nd Exit from C-D Road

C-D Road Advance Exit/Through Direction

Upward Pointing Arrow System

272

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC GUIDANCE SIGNS –
GF- TOURISM DIRECTION

GF1

Attractions

Services

Refer V1 4.10.18 V4 7.2.1
Freeway Advance Exit

GF2

Attractions

Services

Refer V1 4.10.21 V4 7.2.15
Advance Exit

GF3

Attractions

Services

Refer V1 4.10.25 V4 7.2.25
Final Turn

GF4

Refer V1 4.10.27 V4 7.2.31
Gore Exit

GF5

Refer V1 4.10.27 V4 7.2.32
Layby Advance

GF6

Refer V1 4.10.27 V4 7.2.33
Layby Turn-In

GF7

Refer V1 4.10.28 V4 7.2.34
Confirmation

AnFab Consult Copyright Reserved

273

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC GUIDANCE SIGNS –
GF- TOURISM DIRECTION

GF8

Service Exit Sequence

Refer V1 4.10.29 V4 7.2.35

GF9

Rest and Service Sequence

Refer V1 4.10.30 V4 7.2.37

GF10

"Totem" Service Area

Refer V1 4.10.31 V4 7.2.40

GF11

SOS Service Spacing

Refer V1 4.10.32 V4 7.2.44

GF12

Advance SOS Service

Refer V1 4.10.32 V4 7.2.45

GF13

Soft Service Turn In

Refer V1 4.10.32 V4 7.2.46

GF14

Last SOS Service

Refer V1 4.10.32 V4 7.2.44

GF15

Parking Free

Refer V1 4.10.32 V4 7.2.45

GF16

Tourist Information

Refer V1 4.10.33 V4 7.2.46

GF17

Park-Time Attraction

Refer V1 4.10.37 V4 7.2.61

TGS17

Temporary Attraction

Refer V1 4.10.37 V4 7.2.62

GF18-RSA

Emergency Services

Refer V1 4.10.3 V4 7.2.63

AnFab Consult Copyright Reserved

274

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1
ROAD TRAFFIC GUIDANCE SIGNS –
GDL- LOCAL DIRECTION

GDL1

Advance Local Direction

Refer V1 4.11.12 V4 13.2.1

GDL2

Local Direction

Refer V1 4.11.14 V4 13.2.10

GDL3

Local Fingerboard

Refer V1 4.11.17 V4 13.2.17

AnFab Consult Copyright Reserved

275

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC – GS SERIES 100

GS100 Series - Traffic Movement Affected by Obstructions

GS101

Refer V1 4.12.9 V4 8.2.1

GS102

Refer V1 4.12.9 V4 8.2.1

GS103

Refer V1 4.12.9 V4 8.2.3

GS104

Refer V1 4.12.9 V4 8.2.3

GS105

Refer V1 4.12.9 V4 8.2.4

GS106

Refer V1 4.12.9 V4 8.2.4

TGS107

Refer V1 4.12.9 V4 8.2.5

TGS108

Refer V1 4.12.9 V4 8.2.5

Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

276

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC – GS SERIES 100

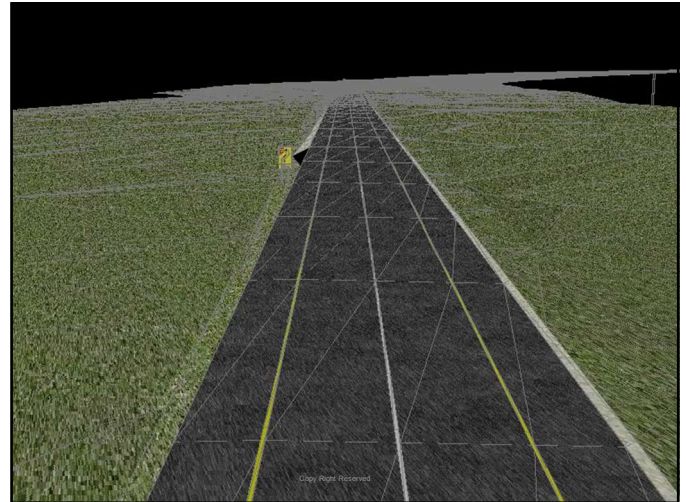
Traffic Movement Affected by Obstructions

GS123 Refer V1 4.12.10 V4 8.2.18	TGS123 Refer V1 4.12.10 V4 8.2.19	GS124 Refer V1 4.12.10 V4 8.2.19	TGS124 Refer V1 4.12.10 V4 8.2.19	GS145 Refer V1 4.12.12 V4 8.2.41	TGS145 Refer V1 4.12.12 V4 8.2.41	GS146 Refer V1 4.12.12 V4 8.2.42	TGS146 Refer V1 4.12.12 V4 8.2.42
GS147 Refer V1 4.12.12 V4 8.2.43	TGS147 Refer V1 4.12.12 V4 8.2.43	GS148 Refer V1 4.12.12 V4 8.2.44	TGS148 Refer V1 4.12.12 V4 8.2.44				

Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

277



ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS SERIES 100

GS100 Series - Traffic Movement Affected by Obstructions (continued)

GS149 Refer V1 4.12.13 V4 8.2.45	TGS149 Refer V1 4.12.13 V4 8.2.45	GS150 Refer V1 4.12.13 V4 8.2.47	TGS150 Refer V1 4.12.13 V4 8.2.47	GS151 Refer V1 4.12.13 V4 8.2.49	TGS151 Refer V1 4.12.13 V4 8.2.51
GS153 Refer V1 4.12.13 V4 8.2.52	TGS153 Refer V1 4.12.13 V4 8.2.52	GS154 Refer V1 4.12.13 V4 8.2.52	TGS154 Refer V1 4.12.13 V4 8.2.52	GS155 Refer V1 4.12.13 V4 8.2.54	TGS155 Refer V1 4.12.13 V4 8.2.55
GS157 Refer V1 4.12.13 V4 8.2.56	TGS157 Refer V1 4.12.13 V4 8.2.57				

Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

279

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS SERIES 200 – ADDITIONAL LANE

GS200 Series - Additional Lane

GS201 Refer V1 4.12.15 V4 8.3.1	GS202 Refer V1 4.12.15 V4 8.3.1	GS203 Refer V1 4.12.15 V4 8.3.1	GS204 Refer V1 4.12.15 V4 8.3.3
GS205 Refer V1 4.12.15 V4 8.3.3	GS206 Refer V1 4.12.15 V4 8.3.3	GS207 Refer V1 4.12.15 V4 8.3.4	GS208 Refer V1 4.12.15 V4 8.3.4

Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

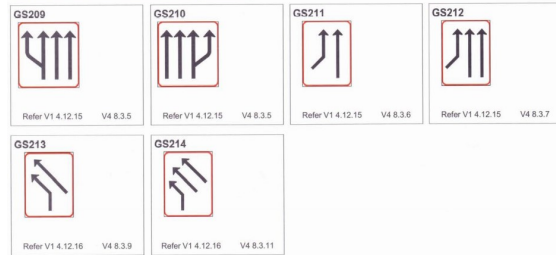
280

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS SERIES 200 – ADDITIONAL LANE



GS200 Series - Additional Lane (continued)



Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

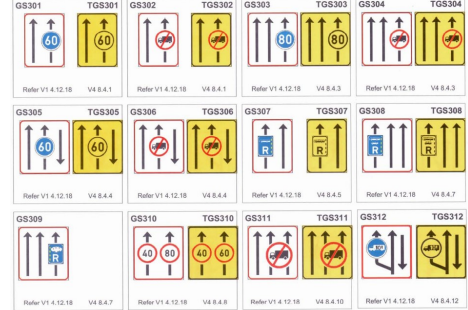
281

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS SERIES 300 – LANE USE CONTROL BY REGULATION



GS300 Series - Lane Use Control by Regulation



Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

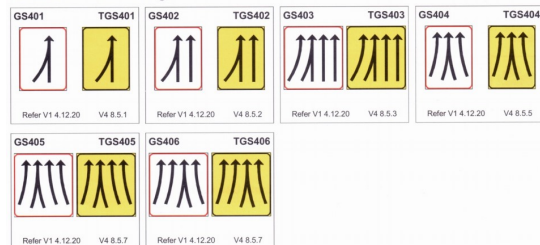
282

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS400 SERIES – LANE MERGES



GS400 Series - Lanes Merge



Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

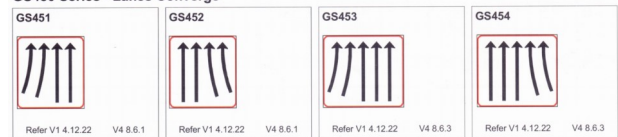
283

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS450 SERIES – LANES CONVERGE



GS450 Series - Lanes Converge



Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

284

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS500 SERIES – HEAVY VEHICLE CONTROL

GS500 Series - Heavy Vehicle Control

<p>Refer V1 4.12.24 V4 8.7.1</p>	<p>Refer V1 4.12.24 V4 8.7.2</p>	<p>Refer V1 4.12.24 V4 8.7.3</p>	<p>Refer V1 4.12.24 V4 8.7.3</p>
<p>Refer V1 4.12.24 V4 8.7.4</p>	<p>GS 6000 SERIES - OVERHEAD</p> <div> <p>Refer V1 4.12.28 V4 8.8.1</p> </div> <div> <p>Refer V1 4.12.28 V4 8.8.2</p> </div>		

Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

285

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
**DIAGRAMMATIC GS600 SERIES –
SPECIFIC SITUATIONS/LANE USE CONTROL**

GS600 Series - Overhead - Specific Situations / Lane Use Control

<p>Refer V1 4.12.28 V4 8.8.1</p>	<p>Refer V1 4.12.28 V4 8.8.2</p>	<p>Refer V1 4.12.28 V4 8.8.3</p>
<p>Refer V1 4.12.28 V4 8.8.3</p>	<p>Refer V1 4.12.28 V4 8.8.4</p>	<p>Refer V1 4.12.28 V4 8.8.4</p>
<p>Refer V1 4.12.28 V4 8.8.5</p>	<p>Refer V1 4.12.28 V4 8.8.6</p>	<p>Refer V1 4.12.28 V4 8.8.7</p>

Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

286

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS600 SERIES – OVERHEAD

GS600 Series - Overhead - Specific Situations / Lane Use Control (continued)

<p>Refer V1 4.12.27 V4 8.8.8</p>	<p>Refer V1 4.12.27 V4 8.8.9</p>	<p>Refer V1 4.12.27 V4 8.8.10</p>	<p>Refer V1 4.12.27 V4 8.8.11</p>
<p>Refer V1 4.12.27 V4 8.8.12</p>			

Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

287

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS6000 SERIES – OVERHEAD

GS6000 Series - Overhead Versions of Signs in Other Series (EXAMPLES)

<p>Refer V1 4.12.28 V4 8.8.10</p>	<p>Refer V1 4.12.28 V4 8.8.11</p>
<p>Refer V1 4.12.28 V4 8.8.12</p>	<p>Refer V1 4.12.28 V4 8.8.13</p>
<p>Refer V1 4.12.28 V4 8.8.14</p>	<p>Refer V1 4.12.28 V4 8.8.15</p>







Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

288

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS700 SERIES – PUBLIC TRANSPORT

GS700 Series - Public Transport

 GS701 Refer V1 4.12.30 V4 8.9.1	 GS702 Refer V1 4.12.30 V4 8.9.1	 GS703 Refer V1 4.12.30 V4 8.9.2	 GS704 Refer V1 4.12.30 V4 8.9.3
 GS705 Refer V1 4.12.30 V4 8.9.3	 GS706 Refer V1 4.12.30 V4 8.9.4		





Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

289

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS800 SERIES – At – GRADE LANE OUT

GS800 Series - At - Grade Lane Layout

















 GS801 Refer V1 4.12.32 V4 8.10.1	 GS802 Refer V1 4.12.32 V4 8.10.1	 GS803 Refer V1 4.12.32 V4 8.10.3	 GS804 Refer V1 4.12.32 V4 8.10.4
--------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------

Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

290

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS800 SERIES – At – GRADE LANE OUT

 GS805 Refer V1 4.12.32 V4 8.10.4	 GS806 Refer V1 4.12.32 V4 8.10.5	 GS807 Refer V1 4.12.32 V4 8.10.5	 GS808 Refer V1 4.12.32 V4 8.10.6
 GS809 Refer V1 4.12.32 V4 8.10.7	 GS810 Refer V1 4.12.32 V4 8.10.7	 GS811 Refer V1 4.12.32 V4 8.10.8	 GS812 Refer V1 4.12.32 V4 8.10.8
 GS813 Refer V1 4.12.32 V4 8.10.9	 GS814 Refer V1 4.12.32 V4 8.10.9	 GS815 Refer V1 4.12.32 V4 8.10.10	 GS816 Refer V1 4.12.32 V4 8.10.10
 GS817 Refer V1 4.12.32 V4 8.10.11	 GS818 Refer V1 4.12.32 V4 8.10.11	 GS819 Refer V1 4.12.32 V4 8.10.12	 GS820 Refer V1 4.12.32 V4 8.10.12





Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

291

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DIAGRAMMATIC GS900 SERIES – JUNCTION WITH WARNING

GS900 Series - Junction with Warning



























 GS901 Refer V1 4.12.35	 TGS901 V4 8.11.1	 GS902 Refer V1 4.12.35	 TGS902 V4 8.11.1
-------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------

Layout may be modified to represent the site conditions
AnFab Consult Copyright Reserved

292

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
PEDESTRIAN DIRECTION



























GP1  TGP1  Refer: V1 4.13.6 V4 16.2.1 Arrow-Straight/Up	GP2  TGP2  Refer: V1 4.13.6 V4 16.2.1 Arrow-Down	GP3  TGP3  Refer: V1 4.13.6 V4 16.2.1 Arrow-Right	GP4  TGP4  Refer: V1 4.13.6 V4 16.2.1 Arrow-Left	GP5  TGP5  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Right
GP6  TGP6  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Right	GP7  TGP7  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Left	GP8  TGP8  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Left	GP9  TGP9  Refer: V1 4.13.6 V4 16.2.4 Pedestrian(s)	GP10  TGP10  Refer: V1 4.13.6 V4 16.2.4 Toilets
GP11  Refer: V1 4.13.6 V4 16.2.5 Toilets (Women)	GP12  Refer: V1 4.13.6 V4 16.2.5 Toilets (Men)	GP13  TGP13  Refer: V1 4.13.6 V4 16.2.7 Disabled	GP14  Refer: V1 4.13.6 V4 16.2.8 Keep Tidy	GP15  Refer: V1 4.13.6 V4 16.2.9 Information

AnFab Consult Copyright Reserved

293

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
PEDESTRIAN DIRECTION

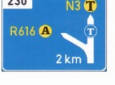
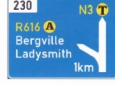
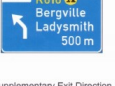
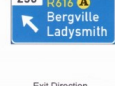
GP1  TGP1  Refer: V1 4.13.6 V4 16.2.1 Arrow-Straight/Up	GP2  TGP2  Refer: V1 4.13.6 V4 16.2.1 Arrow-Down	GP3  TGP3  Refer: V1 4.13.6 V4 16.2.1 Arrow-Right	GP4  TGP4  Refer: V1 4.13.6 V4 16.2.1 Arrow-Left	GP5  TGP5  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Right
GP6  TGP6  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Right	GP7  TGP7  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Left	GP8  TGP8  Refer: V1 4.13.6 V4 16.2.2 Arrow-Half Left	GP9  TGP9  Refer: V1 4.13.6 V4 16.2.4 Pedestrian(s)	GP10  TGP10  Refer: V1 4.13.6 V4 16.2.4 Toilets
GP11  Refer: V1 4.13.6 V4 16.2.5 Toilets (Women)	GP12  Refer: V1 4.13.6 V4 16.2.5 Toilets (Men)	GP13  TGP13  Refer: V1 4.13.6 V4 16.2.7 Disabled	GP14  Refer: V1 4.13.6 V4 16.2.8 Keep Tidy	GP15  Refer: V1 4.13.6 V4 16.2.9 Information

AnFab Consult Copyright Reserved

294

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
GA SERIES – CLASS A1 TOLL DIRECTION






GA1  Refer: V1 4.14.9 V4 15.2.2 15.2.4 15.4.1 Pre-Advance Exit Direction (Class A1 Freeway)	GA2  Refer: V1 4.14.9 V4 15.2.2 15.2.4 Advance Exit Direction (Class A1 Freeway)
GA2/3  Refer: V1 4.14.10 V4 15.2.4 Supplementary Exit Direction (Class A1 Freeway)	GA3  Refer: V1 4.14.11 V4 15.2.4 Exit Direction (Class A1 Freeway)

AnFab Consult Copyright Reserved

295

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
GA SERIES – CLASS A1 TOLL DIRECTION

GA5  Refer: V1 4.14.12 V4 15.2.4 Advance Off-Ramp Terminal Direction (Class A1 or Class A2 Freeway)	GA6  Refer: V1 4.14.12 V4 15.2.4 Off-Ramp Terminal Direction (Class A1 or Class A2 Freeway)
GA7A  Refer: V1 4.14.13 V4 15.2.5 Confirmation-Alternative Route (Class A1)	GA7R  Refer: V1 4.14.13 V4 15.2.7 Confirmation-Toll Route Ahead (Class A1)
GA7P  Refer: V1 4.14.13 V4 15.2.8 Confirmation-Toll Plaza Ahead (Class A2)	

AnFab Consult Copyright Reserved

296

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
GA SERIES – CLASS A1 TOLL DIRECTION

AnFab Consult Copyright Reserved **297**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
DESIGN BASIC PRINCIPLES – SEE Volume 4

AnFab Consult Copyright Reserved **298**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
LETTERING ALPHABET AND PUNCTUATION STYLES*

Style "A" Compressed Lettering
(recommended for temporary guidance signs)

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890-.,:;<>

Style "B" Normal Lettering

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890-.,:;<>

"B MOD" Style
(increased stroke width)

ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890

*No other fonts are allowed on road traffic signs

AnFab Consult Copyright Reserved **299**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
NUMBER OF BITS ON GUIDANCE SIGNS

"BITS": is a measure of amount of information displayed on a road sign, typically a guidance or information sign – All sign face components such as text, arrows, symbols, route numbers etc. have been allocated "bit" values (see below) – **the maximum recommended number of "bits" of information on a sign face is 10 "bits".**

(i) Words up to/including 8 letters = 1 bit
(ii) Words more than 8 letters = 2 bits
(iii) Arrow (stack type) = 0,25 bit
(iv) Route number = 0,5 bit
(v) Symbol = 0,5 bit
(vi) Distance information = 0,5 bit
(vii) Interchange number = 0,5 bit

AnFab Consult Copyright Reserved **300**

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
READING TIME NOT SUFFICIENT



AnFab Consult Copyright Reserved

301

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
LEGIBILITY DISTANCE

TABLE 4.1

SPEED CONVERSIONS

TABLE 4.1

km/h	m/s
60	16.67
80	22.22
100	27.78
120	33.33

TABLE 4.2

MAXIMUM LEGIBILITY DISTANCE (dt)

TABLE 4.2

Letter Heights (mm)	Legibility distance (m)
175/125	62
210/150	75
280/200	100
350/250	125
420/300	150



Layout may be modified to represent the site conditions

AnFab Consult Copyright Reserved

302

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
READING TIME AVAILABLE AND REQUIRED

TABLE 4.3

READING TIME AVAILABLE (T)

TABLE 4.3

Letter Heights (mm)	Reading distance (m)	Reading Time (sec)			
		Speed (km/h)			
		60	80	100	120
175/125	6	0.36	0.27	0.22	0.18
210/150	19	1.14	0.86	0.68	0.57
280/200	44	2.64	1.98	1.58	1.32
350/250	69	4.14	3.11	2.48	2.07
420/300	94	5.64	4.23	3.38	2.82

TABLE 4.4

READING TIME REQUIRED (T)

TABLE 4.4

"Bits" of Information (N)	Reading Time (sec)
4	1.34
6	2.14
8	2.94
10	3.74
12	4.54

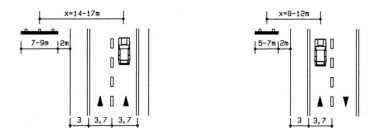


AnFab Consult Copyright Reserved

303

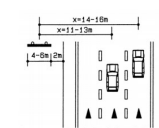
ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
**DETERMINATION OF LETTER SIZES –
LATERAL AND VERTICAL DISPLACEMENT**

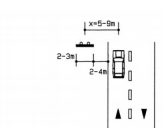


Detail 4.26.1 Lateral Displacement: Rural Class A

Detail 4.26.2 Lateral Displacement: Rural Class B



Detail 4.26.3 Lateral Displacement: Urban Class A or B



Detail 4.26.4 Lateral Displacement: Rural Urban Class C or D



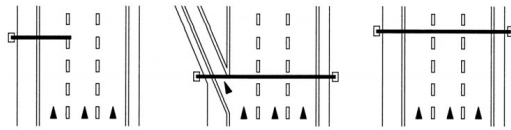
AnFab Consult Copyright Reserved

304

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4

ROAD TRAFFIC GUIDANCE SIGNS – DETERMINATION OF LETTER SIZES – LATERAL AND VERTICAL DISPLACEMENT



Detail 4.26.5 Vertical Displacement of Overhead Signs: $x = 6 - 8$ m

NOTES:

- (1) Lane dimensions given are representative only. Actual dimensions should be used to determine "x".
(2) Values for "x" may be used in formulae in Figures 4.29 and 4.30 or in the Nomograms in Figures 4.31 to 4.35.



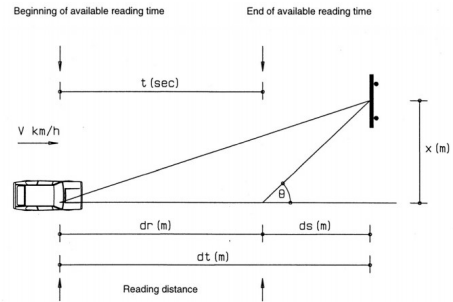
AnFab Consult Copyright Reserved

305

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4

ROAD TRAFFIC GUIDANCE SIGNS – DETERMINATION OF LETTER SIZES – LATERAL AND VERTICAL DISPLACEMENT – GROUND MOUNTED



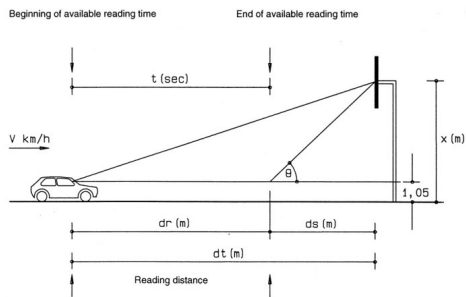
AnFab Consult Copyright Reserved

306

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4

ROAD TRAFFIC GUIDANCE SIGNS – DETERMINATION OF LETTER SIZES – LATERAL AND VERTICAL DISPLACEMENT – OVERHEAD MOUNTED



AnFab Consult Copyright Reserved

307

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4

ROAD TRAFFIC GUIDANCE SIGNS – RECOMMENDED RURAL LETTER SIZES –

TABLE 4.5 RECOMMENDED LETTER SIZES - RURAL SIGNS

Road Class		Operating Speed (km/h)	Sign Displacement X(m)	Letter size (mm)	
Overhead	Ground Mounted			Direction	Tourism
A1		120	8 (2-3)	490/350	
B	A1,A2	120	15 (2)	350/250	280/200
	100	100	8 (2-3)	420/300	
	8,C	120	8 (1)	280/200	210/150
	8,C,D	100	8 (1)	280/200	175/125
	8	80	8 (2-3)	350/250	
	8,C,D	80	8 (1)	210/150	175/125

For D=1,0 N=8(Direction) N=5(Tourism) D=1.5(Overhead)



See SADC Fig 4.30

AnFab Consult Copyright Reserved

308

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4

ROAD TRAFFIC GUIDANCE SIGNS – RECOMMENDED URBAN LETTER SIZES –

TABLE 4.6		RECOMMENDED LETTER SIZES - URBAN SIGNS		TABLE 4.6	
Road Class		Operating Speed (km/h)	Sign Displacement X(m)	Lettersize (mm)	
Overhead	Ground Mounted			Direction	Tourism
A1		100	8 (2-3)	350/250	280/200
A1	A1	100	15 (3)	350/250	280/200
		80	8 (2-3)	350/250	210/150
		80	15 (3)	350/250*	210/150
8	A1	80	8 (2-3)	350/250	210/150
	B,C	80	13 (2)	280/200	210/150
8		60	8 (2-3)	280/200	210/150
	8,C	60	9 (2)	210/150	140/100
	8,C,D	60	6 (1)	175/125	140/100*
	8,C,D	50	6 (1)	175/125*	112/80

For D=1,5 N=6(Direction) N=3(Tourism) D=1,5(Overhead)

Where * =Next lower letter size is optional.

See SADC Fig. 4.30

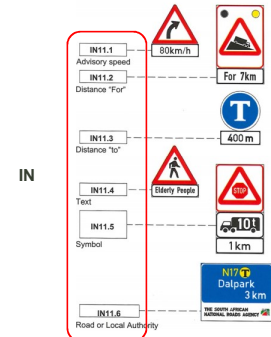
AnFab Consult Copyright Reserved

309

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS



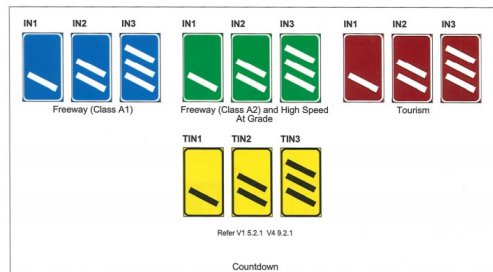
AnFab Consult Copyright Reserved

310

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS – COUNTDOWN



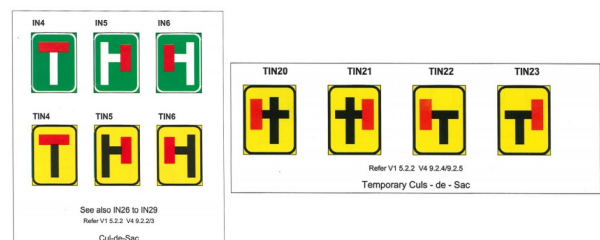
AnFab Consult Copyright Reserved

311

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS – Cul-de-Sac



AnFab Consult Copyright Reserved

312

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS –

IN7

Refer V1 5.2.3 V4 9.2.6

Right of Way

IN8

Number not allocated

IN9

Refer V1 5.2.3 V4 9.2.7

Park and Ride - Bus

IN10

Refer V1 5.2.3 V4 9.2.7

Park and Ride - Train

313

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS – SUPPLEMENTARY PLATES

IN11.1 **TIN11.1**

80km/h

60km/h

References V1 5.2.4 V4 9.2.8 - 9.2.13

Supplementary Plates - Advisory Speed

IN11.2 **TIN11.2**

For 12km

For 5km

References V1 5.2.4 V4 9.2.8 - 9.2.13

Supplementary Plates - Distance "For" •

IN11.3 **TIN11.3**

200 m

1km

References V1 5.2.4 V4 9.2.8 - 9.2.13

Supplementary Plates - Distance "To"

IN11.4 **TIN11.4**

Blind People

Accident

References V1 5.2.4 V4 9.2.8 - 9.2.13

Supplementary Plates - Text Message •

314

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS – SUPPLEMENTARY PLATES INFORMATION

IN11.5** **TIN11.5****

References V1 5.2.4 V4 9.2.8 - 9.2.13 9.2.20 9.2.31

Supplementary Plates - Symbolic Message

IN11.6

THE SOUTH AFRICAN NATIONAL ROADS AGENCY

TIN11.6

TOWN COUNCIL OF BENDINI

References V1 5.2.4 V4 9.2.11

Supplementary Plates - Road or Local Authority •

IN12

Refer V1 5.2.6 V4 9.2.14

Information Centre

IN13

ROAD EXPERIMENT

Refer V1 5.2.6 V4 9.2.15

Road Experiment •

IN14

55 km/h

Refer V1 5.2.7 V4 9.2.17

Co-ordinated Traffic Signals

IN15

3 PHASE

Refer V1 5.2.7 V4 9.2.18

Multi - Phase Traffic Signals •

IN16

1 km

Refer V1 5.2.8 V4 9.2.19

Bus Stop Ahead

IN16 - Nam

1 km

Refer V1 5.2.8 V4 9.2.20

Pick - Up Point Ahead •

IN17

Refer V1 5.2.8 V4 9.2.21

Modal Transfer Car - Train

IN18

Refer V1 5.2.8 V4 9.2.21

Modal Transfer Car, Minibus, Train

315

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 5

ROAD TRAFFIC INFORMATION SIGNS –

IN24

Huguenot Tunnel Plaza

Truck	R 10.00
Tractor	25.00
Tram	39.00
Tram	63.50

Refer V1 5.2.9 V4 9.2.22

Toll Tariff Board Standard Size

IN25

Mvoti Plaza

Truck	R 10.00
Tractor	25.00
Tram	39.00
Tram	63.50

Refer V1 5.2.9 V4 9.2.23

Toll Tariff Board Reduced Size

IN26

Keep Left

Local Traffic Only

Refer V1 5.2.10 V4 9.2.24

Text Message •

IN27

80% Coins/Cards No Change Given

AUTOTOL







Refer V1 5.2.10 V4 9.2.25/2.28

316

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 4
ROAD TRAFFIC GUIDANCE SIGNS –
SYMBOLIC SUPPLEMENTARY PLATES


Symbolic Supplementary Plates IN11.500 Series
(continued on p 5.0.5)

IN11.501 TIN11.501  <small>References V1 5.2.4 V4 9.3.17</small> Tow Away Zone	IN11.502 TIN11.502  <small>References V1 5.2.4 V4 9.3.18</small> Arrow - left	IN11.503 TIN11.503  <small>References V1 5.2.4 V4 9.3.18</small> Arrow - right	IN11.504 TIN11.504  <small>References V1 5.2.4 V4 9.3.18</small> Arrow - Both Ways
IN11.505 TIN11.505  <small>References V1 5.2.4 V4 9.3.19</small> Reduced Width	IN11.506  <small>References V1 5.2.4 V4 9.3.19</small> Prosecuting by Camera	NOTE : Numbers IN11.507 to IN11.559 not allocated	

317

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



318

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS

The growing traffic congestion on sections of the road network, in combination with its ever-increasing complexity, requires that road authorities consider special management methods to control and optimise the use of the network.

Such needs may exist in major metropolitan areas, on by-passes or on rural sections of roadway during peak holiday seasons.

319

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS

Variable message road traffic signs may be used as a component of a Road Traffic and Safety Management System.

The type of sign covered by the description VARIABLE MESSAGE SIGN varies extremely widely, from the well-known STOP/GO sign R1.5A/R1.5B, which is manually operated, to highly sophisticated, computer operated, gantry mounted fibre optic signs which offer the option of many different messages.

320

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



Economic considerations are often such that funding cannot be made available to build new roads.

It becomes necessary as congestion develops that the best possible utilization is achieved from the road space available.

VARIABLE MESSAGE SIGNS can play an important role in the safe optimization of available road space whether it is in and around our cities, or on other sections of the network subject to operational break-downs due to bad weather, accidents or maintenance activities.



AnFab Consult Copyright Reserved

321

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



In assessing the need for major variable message sign installations the economic considerations of not doing so must be thoroughly investigated. Roads, and in particular freeways, represent a major capital investment and the best return on this investment should be achieved.

Safety is undeniably of paramount importance, but although safety is obviously important from the point of view of relieving human suffering in the form of accidents, it also has major economic implications.



AnFab Consult Copyright Reserved

322

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



On a national scale accidents and congestion cost vast sums of money.

These costs occur in the form of damage to vehicles and public utilities and in hospitalisation, and in lengthy delays to thousands of people at a time.

The less direct costs involved in providing emergency, ambulance, tow-away services and emergency traffic control together with the cost of administrative overheads add significantly to the national cost.



AnFab Consult Copyright Reserved

323

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



Road traffic and safety management techniques aimed at reducing these costs are likely to produce worthwhile returns on the investment involved.

The harmonizing and stabilizing of traffic speed are vital factors in road safety.

Harmonising traffic speed will increase the dynamic capacity of a roadway significantly and this is particularly important when the static capacity of the roadway has been reduced as a result of a lane closure due to an accident or roadworks.

Drivers instinctively adjust their speed under adverse conditions.

They will, however be unaware of conditions three or four kilometres ahead of them.



AnFab Consult Copyright Reserved

324

VARIABLE MESSAGE SIGNS



MONITOR CHANGING ROAD CONDITIONS

SARF AnFab Consult

AnFab Consult Copyright Reserved

325

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS

If those conditions become unstable drivers are not able to react so as to maintain harmonious flow conditions.

If a traffic control management system is provided, however, advice can be given remote from the site of an incident location, which will allow harmonious flow conditions to be maintained.

As a general example, due to reduced headways required, a reduction in running speed by some 35% could result in 150% more capacity on a given section of roadway.

AnFab Consult

AnFab Consult Copyright Reserved

326

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS OBJECTIVES

The introduction of VARIABLE MESSAGE SIGNS should be aimed at achieving one, or more, of the objectives listed in the following paragraphs.

The primary objective should be greater safety, achieved by:

- (a) reducing the risk of primary accidents;
- (b) giving advance warning of conditions which may result in traffic queues so that the increased likelihood of secondary accidents is reduced.

AnFab Consult

AnFab Consult Copyright Reserved

327

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS OBJECTIVES

The next major objective should be better utilization of road capacity and therefore a reduction in the cost of congestion by:

- (a) distributing traffic more evenly in the road network;
- (a) distributing traffic more evenly in the road network;
- (c) avoiding localised congestion resulting in long delays.

AnFab Consult

AnFab Consult Copyright Reserved

328

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – **VMS OBJECTIVES**



It should also be an objective to make the task of the police, road construction units and other authorities responsible for the safe use of the roadway easier by:

- (a) providing the means for rapid and effective action for incident management;
- (b) offering aids which will enable roadworks to be carried out more quickly and efficiently.



AnFab Consult Copyright Reserved

329

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – **VMS OBJECTIVES**



In addition when a sophisticated system is under consideration it should be designed to collect traffic data with the objective of:

- (a) facilitating an assessment of the state of the system;
- (b) using the data to assist decision-making in order to optimize use of the system;
- (c) developing new strategies which can be used to amplify the system at a later date



AnFab Consult Copyright Reserved

330

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – **VMS OBJECTIVES**



The achievement of these objectives will best be realised by designing the system to provide one or more of the following:

- (a) a facility for advising a constant (normally reduced) speed in special circumstances e.g.. mist, fog, accident;
- (b) detection of disruptions in traffic flow and translating this into warnings to reduce speeds;
- (c) adequate warning of changes in road situation e.g. roadworks, maintenance etc.;



AnFab Consult Copyright Reserved

331

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – **VMS OBJECTIVES**



The achievement of these objectives will best be realised by designing the system to provide one or more of the following:

- (d) the use of the system to close off a lane simply and clearly with the emphasis on simplicity and speed;
- (e) by making it possible for the police to close a lane and/or introduce speed controls in the event of an accident;
- (f) a flexible system of data collection and recording which allows for all forms of data to be collected simultaneously at a large number of points.



AnFab Consult Copyright Reserved

332

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9

APPLICATIONS FOR VMS

The number of applications for VARIABLE MESSAGE SIGNS in the traffic and transportation field is constantly growing.

Typical of current applications are the following:

- (a) hazard warning;
- (b) speed regulation or advice;
- (c) specific vehicle routing (including bus lanes);
- (d) alternative routing;
- (e) road construction and maintenance
- (f) lane control and reversal of lane use;
- (g) parking availability;
- (h) transport terminal information, both externally and internally.



AnFab Consult Copyright Reserved

333

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9

VARIABLE MESSAGE SIGNS – VMS

Collectively these applications may be considered to come under the general description of Road Traffic and Safety Management Systems.



AnFab Consult Copyright Reserved

334

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9

TYPES OF VMS

The range of VARIABLE MESSAGE SIGN types is large.

Ultimately the final decision is likely to be based on economic considerations and the more expensive installations must only be chosen after a comprehensive cost benefit analysis has been carried out.

Due to the lack of direct Southern African experience of VMS's, it is likely that pilot projects will be required over a number of years to determine the ideal parameters for a comprehensive variable message sign traffic management system.



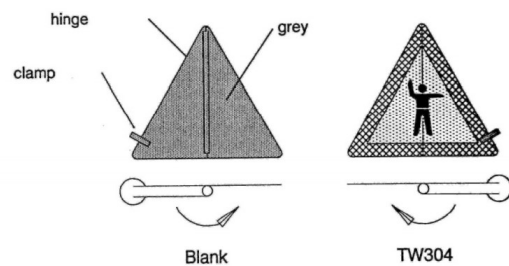
AnFab Consult Copyright Reserved

335

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9

VARIABLE MESSAGE SIGNS – VMS

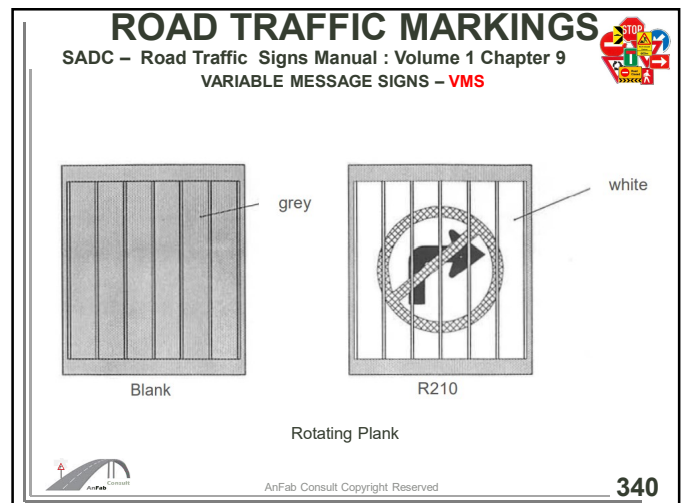
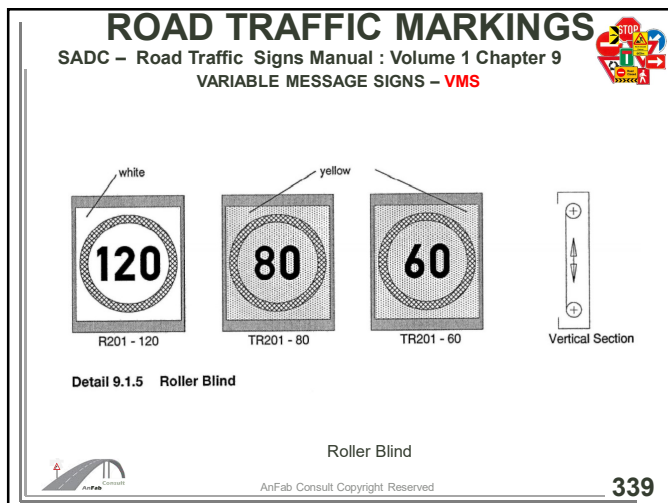
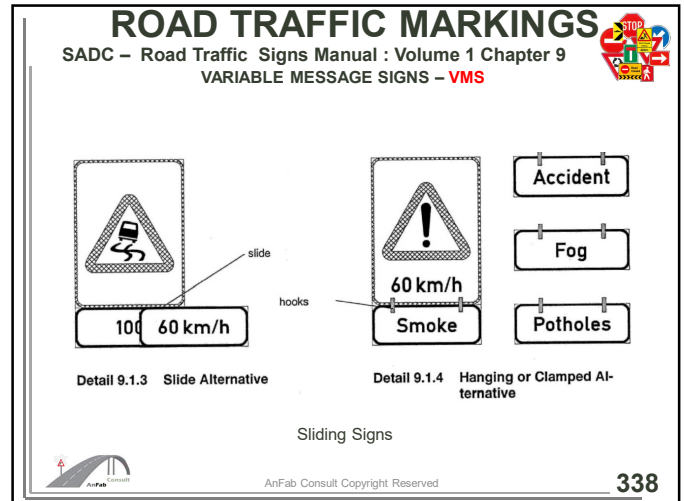
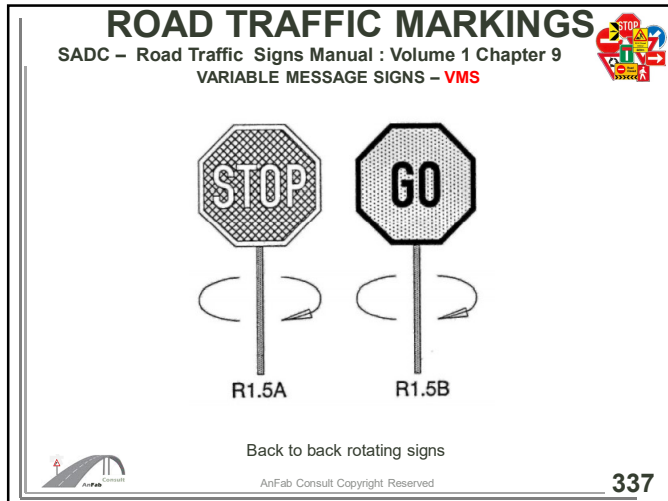


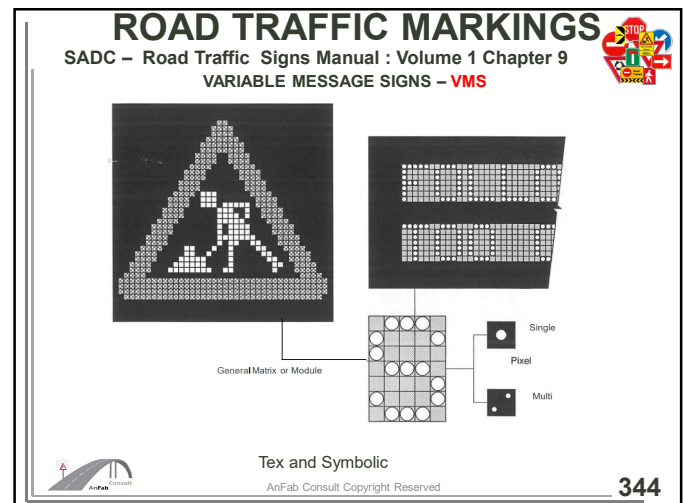
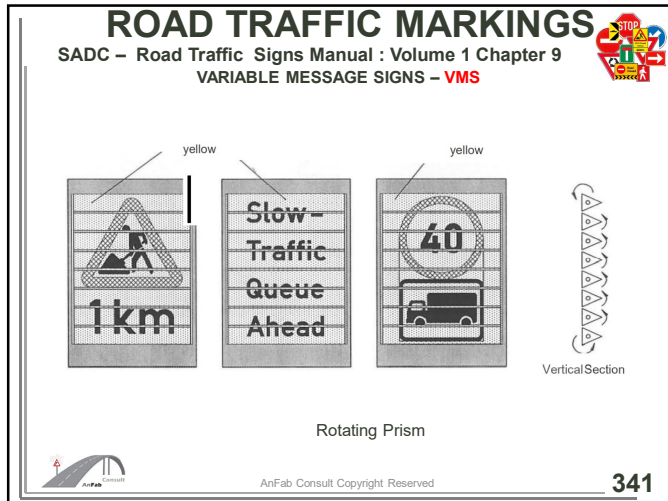
Back to back rotating signs



AnFab Consult Copyright Reserved

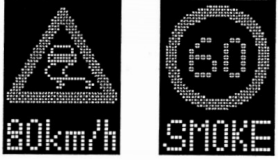
336



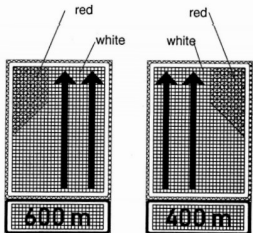


ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS




Multiple message capability



Only changing area provided with discs

Detail 9.3.4 Guidance VMS

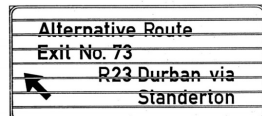


AnFab Consult Copyright Reserved

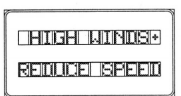
345

ROAD TRAFFIC MARKINGS


SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VARIABLE MESSAGE SIGNS – VMS



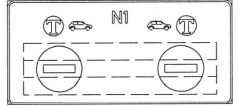
Detail 9.3.5 Guidance - Direction VMS




Detail 9.3.6 Information VMS



Detail 9.3.7 Regulatory / Guidance Combination VMS





AnFab Consult Copyright Reserved

346

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 9
VMS and Road Traffic and Safety Management

Dynamic real-time traffic control can be achieved by designing an integrated computer operated intelligent system incorporating variable message signs

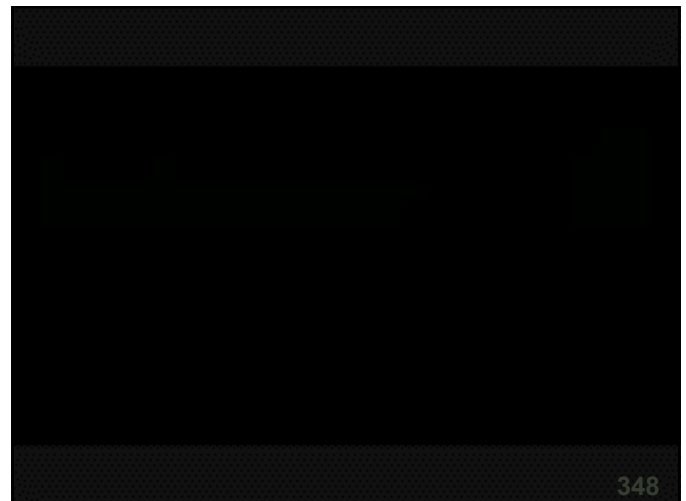
Sections of roadway experiencing unacceptable levels of congestion and accident rates and therefore high user costs, may warrant such a system. Although the capital cost is likely to be high the benefits to be achieved can be cost-effective.

Comprehensive systems have been developed in Europe and the Americas which operate automatically with no need for manual intervention. Such systems are capable of detecting incidents, congestion, and even weather conditions.



AnFab Consult Copyright Reserved

347



Complete assignment – Module 3



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

349

MODULE 4 – TRAFFIC SIGNALS



AnFab Consult Copyright Reserved

350

MODULE 4 SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL (SARTSM)

VOLUME 3 TRAFFIC SIGNAL DESIGNS



AnFab Consult Copyright Reserved

351

SADC ROAD TRAFFIC SIGNS MANUAL

Volume 3 – Chapter 12 : Traffic Signals

- 1 . Temporary traffic signals may be provided at roadwork construction sites for the following purposes:
 - (a) to successively give right of way to two-way traffic approaching from opposite directions, along a single traffic lane, in place of a manually operated STOP-GO sign;



AnFab Consult Copyright Reserved

352

SADC ROAD TRAFFIC SIGNS MANUAL



Volume 3 – Chapter 12 : Traffic Signals

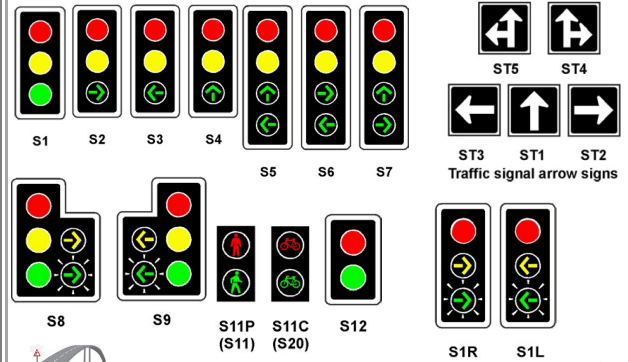
- (b) to control the movement of traffic, including site vehicles, where a public road enters or crosses a road that is under construction, or haul road;
- or
- (c) as an interim measure to control traffic where a permanent traffic signal is to be provided, altered or replaced as part of a roadworks project.



AnFab Consult Copyright Reserved

353

Volume 1 Part 2 Chapter 6 – Traffic Signal Design (see Volume 3 Chapter 12)



AnFab Consult Copyright Reserved

354

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Intersection and Definition

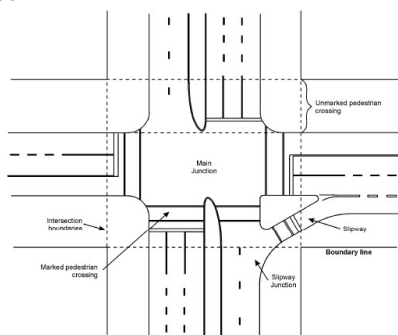


Figure 3.1: Definition of intersections, junctions, slipways and pedestrian crossings

AnFab Consult Copyright Reserved

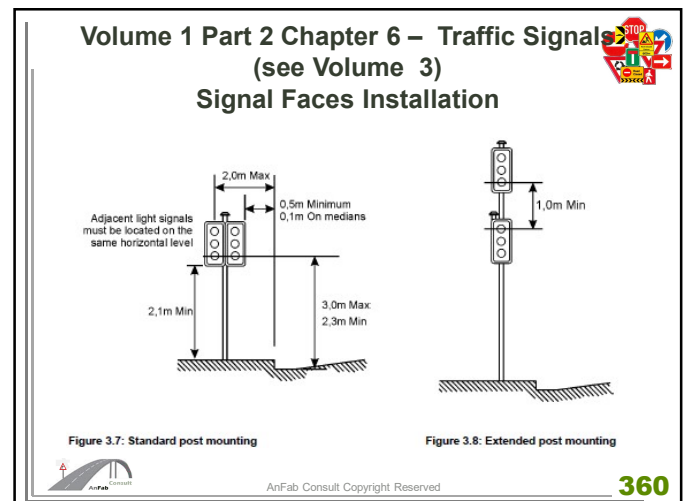
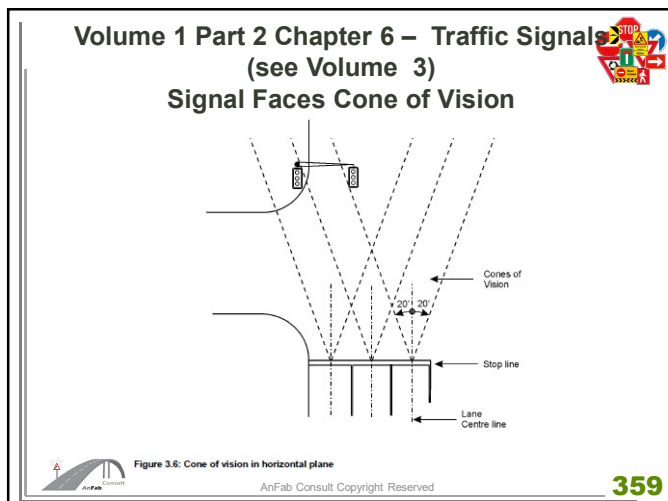
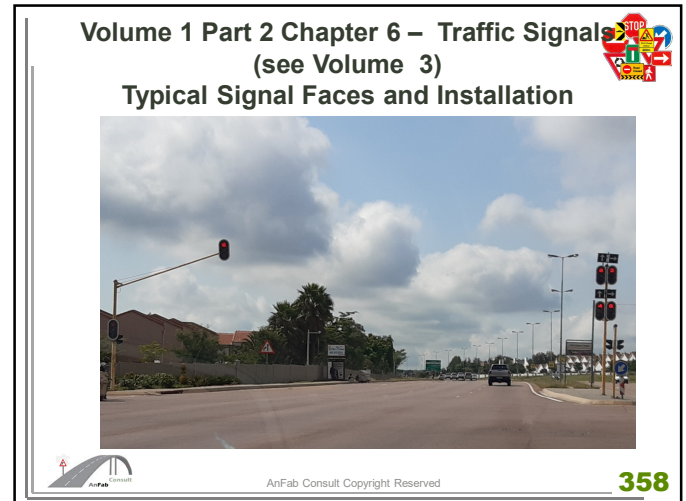
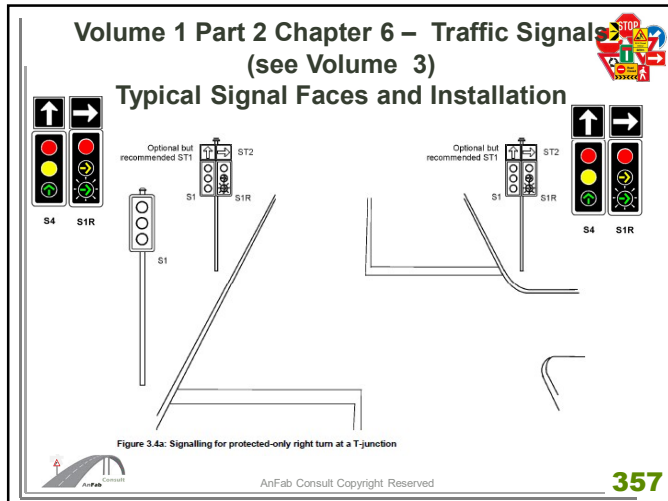
355

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Signal Faces and Installation



AnFab Consult Copyright Reserved

356



Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Signal Faces Installation

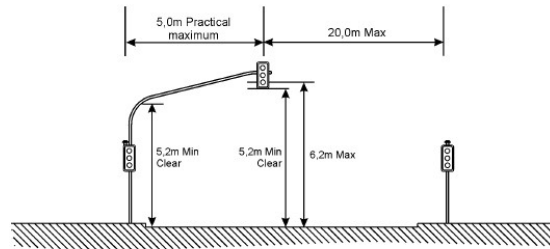


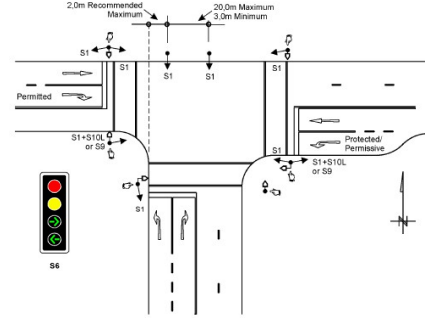
Figure 3.9: Overhead (cantilever) mounting of traffic signal faces



AnFab Consult Copyright Reserved

361

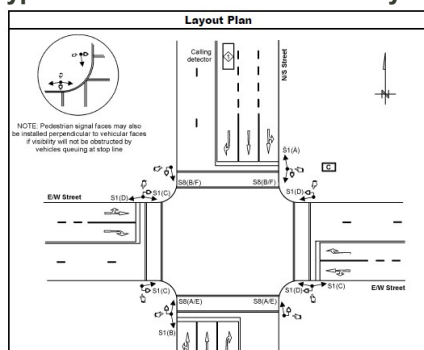
Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Signal Faces Installation



AnFab Consult Copyright Reserved

362

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Intersection Plan and Layout



AnFab Consult Copyright Reserved

363

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Pedestrian Mid-block Crossing

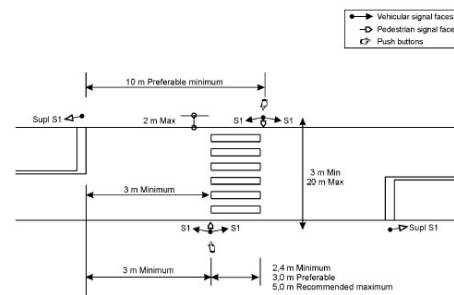


Figure 4.2: Pedestrian (and pedal cyclist) signal faces at a mid-block crossing



AnFab Consult Copyright Reserved

364

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Pedestrian Crossing

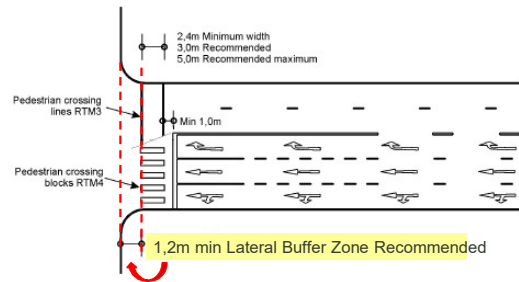


Figure 4.5: Pedestrian crossing road markings at a junction



AnFab Consult Copyright Reserved

365

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Pedestrian Crossing



Figure 4.6: Mounting pedestrian and pedal cyclist signals



AnFab Consult Copyright Reserved

366

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Intersection Vehicle Sweep Paths

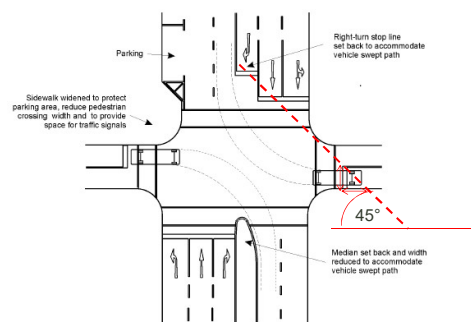


Figure 5.1: Vehicle sweep paths through a signalised junction



AnFab Consult Copyright Reserved

367

Volume 1 Part 2 Chapter 6 – Traffic Signals (see Volume 3) Typical Intersection and Definition

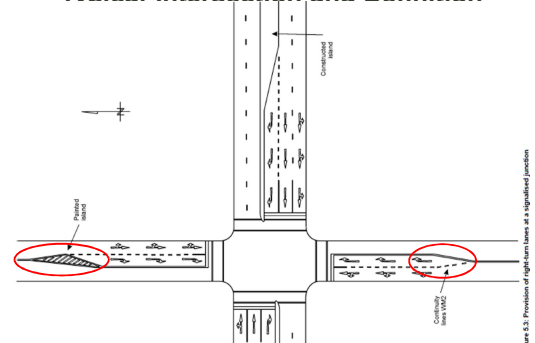
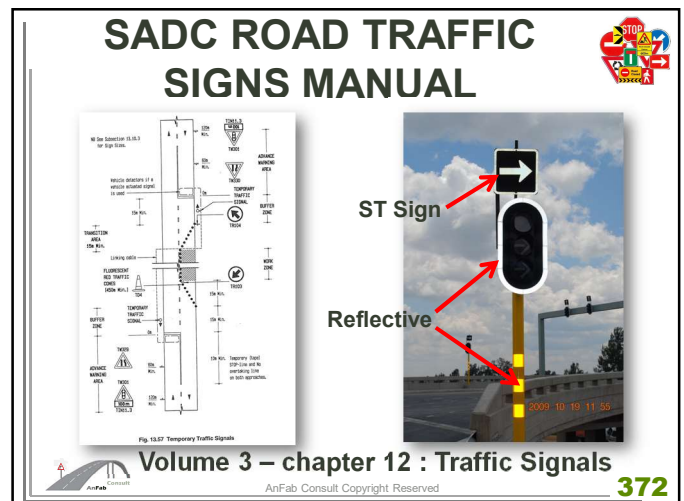
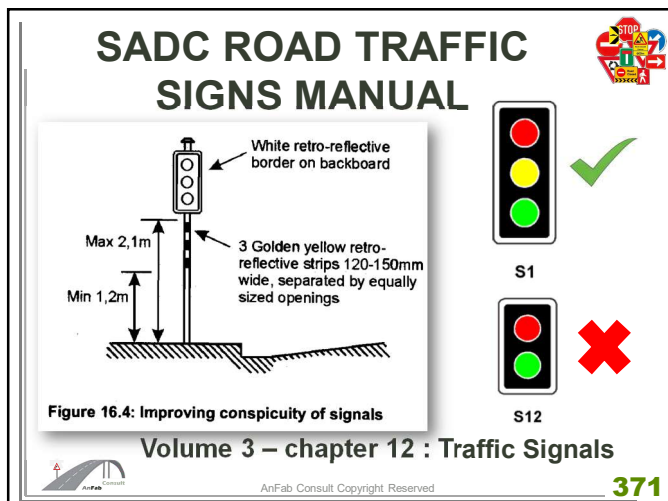
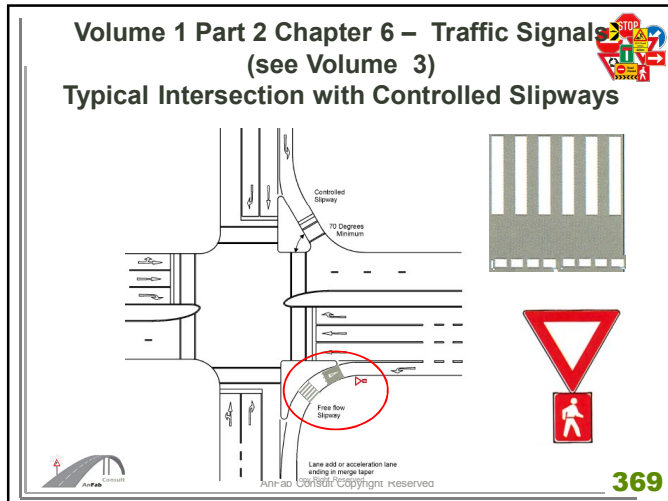


Figure 5.2: Provision of right-hand lanes at a signalised junction



AnFab Consult Copyright Reserved

368



SADC ROAD TRAFFIC SIGNS MANUAL



The National Road Traffic Regulations require that a responsible registered **PROFESSIONAL ENGINEER** or registered professional **TECHNOLOGIST** (engineering) of the road authority concerned **SHALL approve** every traffic signal installation at a signalised junction or pedestrian or pedal cyclist crossing, and sign a declaration containing the following:

- (a) scaled drawing of the layout of the junction or crossing, indicating lane markings and road layout;
- (b) number, type and location of traffic signal faces;
- (c) pedestrian and pedal cyclist facilities, including pedestrian push buttons;
- (d) phasing, time plans and offset settings;
- (e) date of implementation; and

(f) **name, signature and registration number of the engineer or technologist (engineering) who approved the signal, and date of signature.**

Volume 3 – Chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

373

SADC ROAD TRAFFIC SIGNS MANUAL



The declaration shall be kept by the road authority in control of the traffic signal concerned.

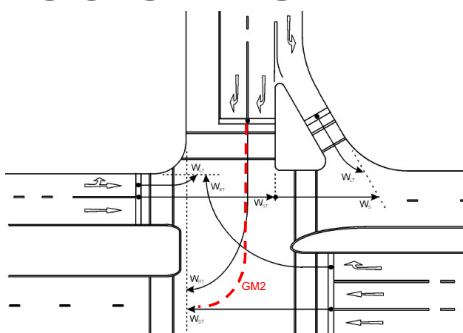
Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

374

SADC ROAD TRAFFIC SIGNS MANUAL



Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

375

SADC ROAD TRAFFIC SIGNS MANUAL



The principles of traffic signal control at permanent installations apply equally to temporary installations. This means that the numbers and locations of signal faces, the compulsory provision of background screens (backboards), sight distances, etc. also apply to temporary traffic signals. The **speed limit** at the traffic signals shall also **not exceed a maximum of 80 km/h.**

Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

376

SADC ROAD TRAFFIC SIGNS MANUAL



It is recommended that **three yellow retro-reflective strips** be provided on the signal posts and that **white retro-reflective borders** be used on backboards. Temporary traffic signals are often used in locations with poor background lighting and where they may be more subject to failure than permanent signals. The signals are also often used in locations where traffic signals would not normally be expected by drivers. It is therefore important that more attention should be given to the visibility of the signals.

Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

377

SADC ROAD TRAFFIC SIGNS MANUAL



Precaution should be taken to ensure the uninterrupted operation of the signals, by securing them against theft and vandalism, and by providing an effective power source. Lights and plant should wherever possible be securely anchored down and **cables should be buried**.

Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

378

SADC ROAD TRAFFIC SIGNS MANUAL



At least two traffic signal faces of type S1 shall be provided on a two-way single lane road at roadworks, one on each side of the road, at a position not less than 6 m (but preferably not less than 10 m) beyond the **stop line RTM1**. However, where the traffic signal is manually operated, only one such signal face may be provided.

The stop line must be suitably located on the wider part of the road so that opposing traffic can pass vehicles waiting at the stop line.

Volume 3 – chapter 12 : Traffic Signals



AnFab Consult Copyright Reserved

379

ROAD TRAFFIC SIGNALS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 6 AND SARTSM 3



VEHICLE-ACTUATED CONTROL

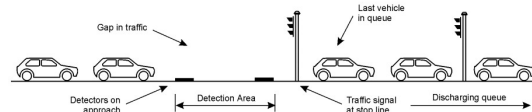


Figure 7.1: Searching for gaps in the traffic stream

Detectors on all the lanes or approaches to a junction are not always needed. If detectors are used only on some lanes or approaches, it is referred to as semi-actuated control. In fully actuated control, detectors would normally be used on all lanes or approaches.



AnFab Consult Copyright Reserved

380

ROAD TRAFFIC SIGNALS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 6 AND SARTSM 3



VEHICLE-ACTUATED CONTROL

Fully-actuated control allows for the extension of all green intervals provided at a signal. This mode of control finds primary application at isolated junctions since it cannot be co-ordinated with other signals without losing the flexibility for which it was designed.

Semi-actuated control is used to call and extend only a subset of phases at a traffic signal, such as a right-turn or the side-street phase. Semi-actuated control can also be used in a linked or co-ordinated signal system.



AnFab Consult Copyright Reserved

381

ROAD TRAFFIC SIGNALS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 6 AND SARTSM 3



VEHICLE DETECTION

A wide range of detecting devices have been developed for use in vehicle-actuated control. The inductive loop detector is currently most widely used in modern traffic control systems.

Inductive loops may operate in one of two modes, namely passage and presence modes.

Presence detectors are used to indicate the presence of a vehicle on the detector, while passage detectors are used to indicate that a vehicle has crossed a loop and no indication is given of the time the vehicle has spent on the loop.



AnFab Consult Copyright Reserved

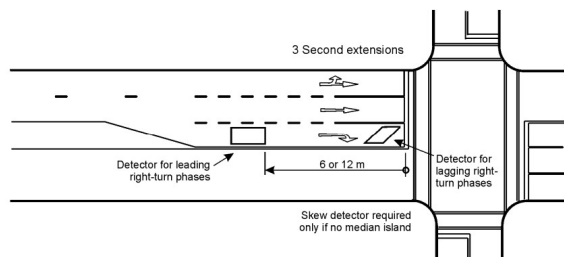
382

ROAD TRAFFIC SIGNALS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 6 AND SARTSM 3



VEHICLE-ACTUATED CONTROL



Right-turn detector configuration



AnFab Consult Copyright Reserved

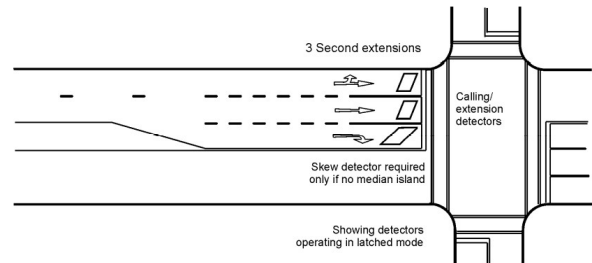
383

ROAD TRAFFIC SIGNALS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 6 AND SARTSM 3



VEHICLE-ACTUATED CONTROL

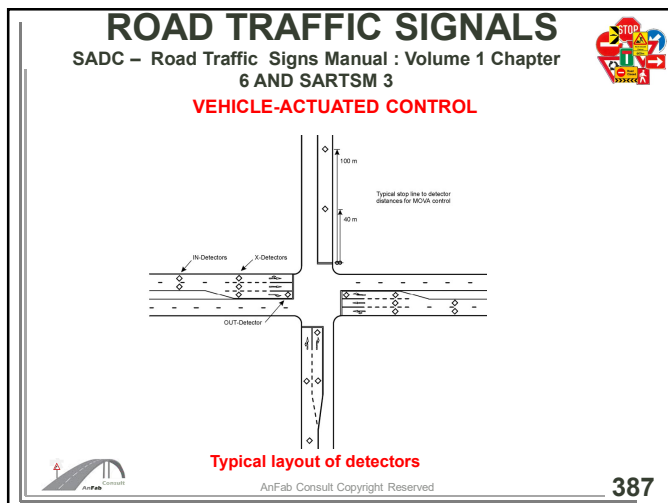
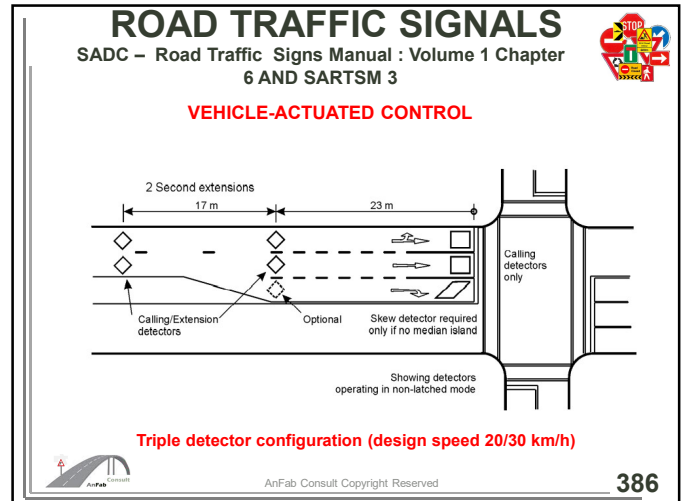
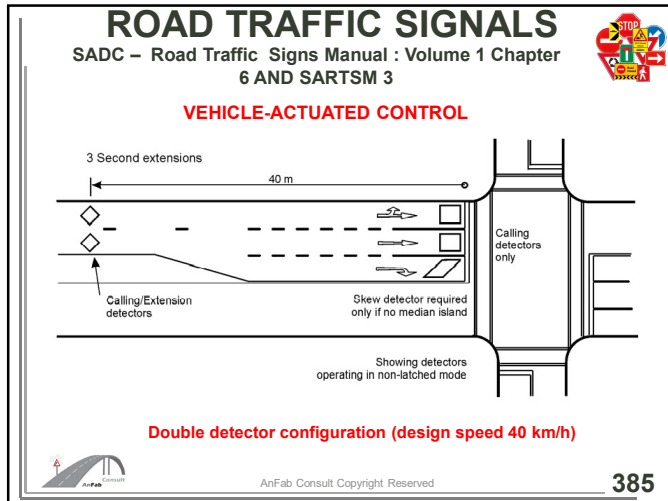


Single stop line detector configuration



AnFab Consult Copyright Reserved

384



Complete assignment – Module 4



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

389

MODULE 5 – ROAD TRAFFIC MARKINGS



AnFab Consult Copyright Reserved

390

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING **NAVIGATION**



AnFab Consult Copyright Reserved

391

ROAD TRAFFIC SIGNS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING **NAVIGATION**



AnFab Consult Copyright Reserved

392

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING –
AIR TRAFFIC NAVIGATION



ROADMARKING ESSENTIAL FOR SAFE LANDINGS



AnFab Consult Copyright Reserved

393

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
ROADMARKING MATERIAL AND RUMBLE STRIPS



Road markings, as we know them, first appeared at the beginning of this century as painted, unbroken, white centre lines to denote dangerous bends and the brows of hills. Today they are used extensively and universally, and come in a variety of configurations and materials. The two major materials are paint and thermoplastic.



AnFab Consult Copyright Reserved

394

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
ROADMARKING MATERIAL AND RUMBLE STRIPS



Road markings, particularly longitudinal markings, play a valuable role in maintaining the continuity of visual information to drivers. The provision of continuous road markings along a road is practical, whereas the provision of continuous visual information by means of road signs is not.



AnFab Consult Copyright Reserved

395

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
ROADMARKING MATERIAL AND RUMBLE STRIPS



Such road markings are thus important to the driving task and in particular the task of vehicle control in terms of the disciplined use of road space (see SADC RTSM Volume 1 - Chapter 7 for applications and Volume 4 – Chapter 12 for dimensions. See SARTSM Volume 2 Chapter 18 for road marking materials).



AnFab Consult Copyright Reserved

396

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
ROADMARKING MATERIAL AND RUMBLE STRIPS



As with most technologies, the development of road marking materials went through several stages in an endeavour to find the road marking material with the lowest cost which also provides the safest operating environment. In this context, it is necessary to consider road marking materials with:

- ✓ low initial cost
- ✓ good day-time and night-time visibility in dry and wet conditions;
- ✓ adequate skid resistance;
- ✓ application methods with minimum traffic interference.



AnFab Consult Copyright Reserved

397

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
ROADMARKING MATERIAL AND RUMBLE STRIPS



The application of road markings is more than a matter of painting lines. It is, In effect, the installation of a traffic regulating system on a highway.

As with all other traffic control devices, **road markings** must **be readily recognized and understood**, and this goal can only be achieved by using a uniform system of road markings, and only when they are desired and warranted.

Motorists should be confronted with the **same type** and **quality of road markings** whenever they travel by road, and these road markings should convey exactly the same meaning wherever they are encountered.



AnFab Consult Copyright Reserved

398

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
ROAD TRAFFIC MARKING –
OBJECTIVES



The objectives to be aimed for in providing road markings are:

- (a) road safety;
- (b) conformity of practice;
- (c) good traffic management leading to optimum road capacity;
- (d) provision of the correct marking first time.



AnFab Consult Copyright Reserved

399

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
OBJECTIVES



The application of road markings to the road surface, and the subsequent maintenance of them represents an on-going budgetary problem for all road authorities.

It is therefore the objective of this chapter (together with Chapter 2: Road Marking Applications) to provide sufficient information and guidance to those involved with road markings to create an awareness of the need to ensure the effectiveness of the markings they provide as well as good quality road marking materials.



AnFab Consult Copyright Reserved

400

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
ROAD TRAFFIC MARKING NAVIGATION –
ROAD MARKING TYPES



- ☐ ROAD MARKING PAINT
 - Solvent
 - Water based
- ☐ HOT MELT THERMOPLASTIC
- ☐ COLD PLASTIC
- ☐ ROADSTUDS
- ☐ RUMBLE STRIPS



AnFab Consult Copyright Reserved

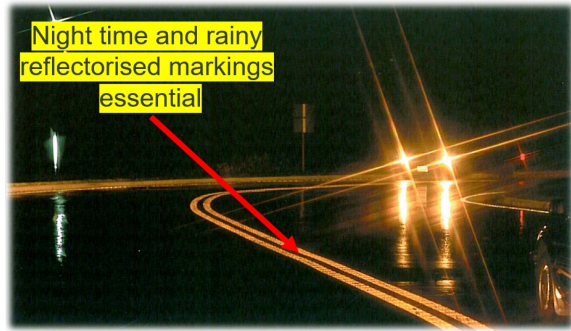
401

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : Volume 1 Chapter 7
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
DAY, NIGHT AND RAINY LOW LIGHT CONDITIONS



Night time and rainy
reflectorised markings
essential



AnFab Consult Copyright Reserved

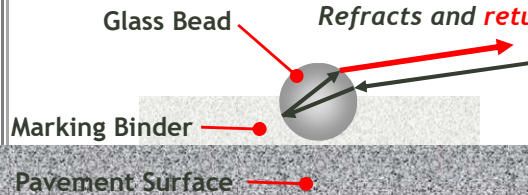
402

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING
Volume 1 Chapter 7 and Volume 4 Chapter 12
COEFFICIENT OF RETRO-REFLECTION



*Light enters the glass bead & refracts
Reflects off binder
Refracts and returns*



AnFab Consult Copyright Reserved

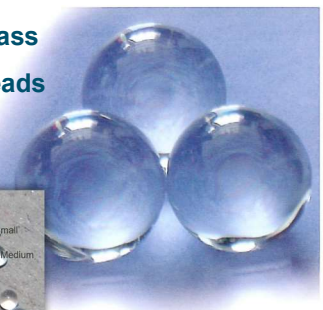
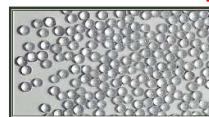
ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 and Volume 4 Chapter 12
COEFFICIENT OF RETRO-REFLECTION



An optical effect
for better visibility

Glass
Beads



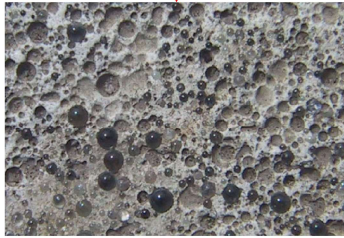
AnFab Consult Copyright Reserved

404

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12

RETRO-REFLECTION - GLASSBEADS



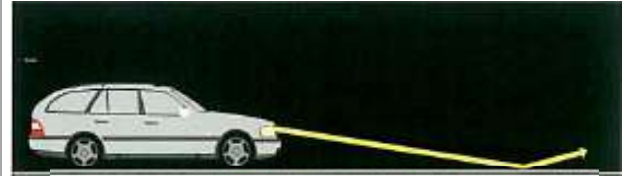
AnFab Consult Copyright Reserved

405

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12

REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION – MIRROR REFLECTION



No glass beads – **no retro-reflection**



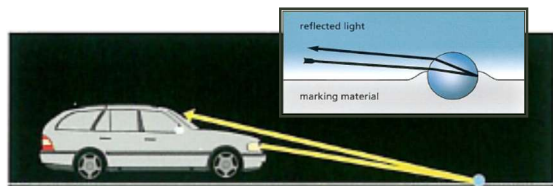
AnFab Consult Copyright Reserved

406

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12

REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION – GLASSBEAD RETROREFLECTION



With glass beads of good optical quality,
Retro-reflection works perfectly

**RETROREFLECTION MEANS
ROAD SAFETY !**



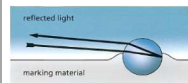
AnFab Consult Copyright Reserved

407

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12

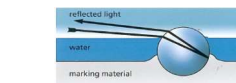
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION – GLASSBEADS RETRO-REFLECTION



The effect of retro-reflection works
perfectly under dry conditions.



However, when it is raining at night,
Retro-reflection with conventional
glass beads is reduced to **almost zero**.



**Larger glass beads improves
Night-time visibility**



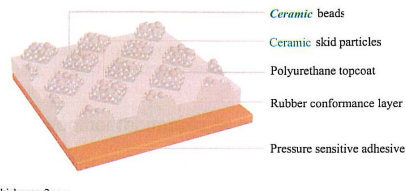
AnFab Consult Copyright Reserved

408

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TYPICAL STICK-ON PAVEMENT MARKINGS
3M Durable Pavement Markings Products
Stamark™ Pavement Marking Tape Series A380

Product composition:



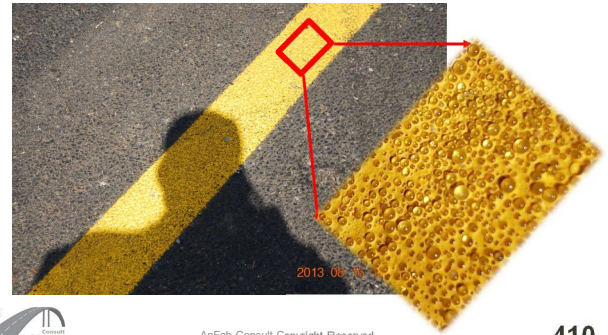
Thickness: 2 mm

AnFab Consult Copyright Reserved

409

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12
REFLECTORISED ROAD TRAFFIC MARKING –
SITE VISUAL REFLECTIVITY ASSESSMENT



AnFab Consult Copyright Reserved

410

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TYPICAL "DROP ON" TYPE HOT MELT THERMOPLASTIC



AnFab Consult Copyright Reserved

411

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
RETRO-REFLECTIVITY MEASUREMENT WITH REFLECTOMETER

TABLE 7.2 ACCEPTABLE VALUES FOR FACTORS APPROPRIATE TO THE SPECIFICATION OF ROAD MARKINGS

Factor	New Materials			Used Materials		
	White	Yellow	Red	White	Yellow	Red
$x^{(1)}$	0.305	0.494	0.660	0.305	0.491	0.655
	0.335	0.476	0.610	0.350	0.444	0.579
Colour	0.325	0.493	0.638	0.340	0.494	0.606
	0.295	0.522	0.690	0.295	0.054	0.690
$y^{(1)}$	0.315	0.505	0.340	0.315	0.518	0.345
	0.365	0.480	0.340	0.360	0.476	0.341
	0.355	0.457	0.312	0.370	0.426	0.314
	0.325	0.477	0.310	0.325	0.454	0.310
Luminance Factor	0.6	0.4	±0.08	0.45	0.3	±0.06
Coefficient of Retroreflectance (non-candela/lux/m²)	150	100	±30	100	70	±20
Skid Resistance (BPN ⁽²⁾)	50			50		

NOTES:

(1) The co-ordinates given refer to the Chromaticity Chart in Figure 1.20. The co-ordinates measured for the colour should fall within the area defined by the co-ordinates given.

(2) "BPN" stands for a value determined by the British Portable Pendulum Number measurement method applicable to all colours of markings.



Minicandelas/Lux/m²
Reflectometer

AnFab Consult Copyright Reserved

412

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7 & Volume 4 Chapter 12

REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
NIGHT CRASH INVESTIGATION - MARKING ASSESSMENT



YELLOW RM4.1 Left Edge Line
Minimum 70 minicandelas/lux/m²

White RM2 NO CROSSING lines –
Minimum 100 minicandelas/lux/m²



AnFab Consult Copyright Reserved

413

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

INTRODUCTION

Road markings may comprise any of the following types, either separately or in combination:

- (a) transverse markings (approximately at right angles to the roadway centre line);
- (b) Longitudinal markings;
- (c) arrows;
- (d) painted islands;
- (e) symbols;
- (f) words, letters and/or numerals;
- (g) parking markings;
- (h) roadstuds;
- (i) other delineation devices.



AnFab Consult Copyright Reserved

414

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

INTRODUCTION

Since many of these types of marking can have more than one functional purpose, road markings are classified as follows:

- (a) regulatory markings;
- (b) warning markings;
- (c) guidance markings;
- (d) roadstuds;
- (e) other delineation devices.



AnFab Consult Copyright Reserved

415

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

TRANSVERSAL REGULATORY MARKINGS - RTM



A **STOP LINE** regulatory marking RTM1 imposes a mandatory requirement upon drivers of vehicles, when combined with a STOP sign R1, a RED traffic signal indication, or the signal of a traffic officer, that they shall stop their vehicle immediately behind such line, AND such line shall have the significance assigned to STOP sign R1. In any other circumstance STOP LINE markings shall have the significance assigned there to by STOP sign R1. (STOP sign R1 includes any and all derivations of sign R1 -see Subsection 2.2.1and Chapter 6.)

A **STOP LINE** shall comprise a continuous solid white line with a minimum width of **300 mm in urban areas** and **500 mm in rural or other areas**.




AnFab Consult Copyright Reserved

416

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM



When used in conjunction with PEDESTRIAN CROSSING LINES marking RTM3, a STOP LINE should be spaced **at least 1m**, and at signalised mid-block crossings preferably 3 m, in advance of the PEDESTRIAN CROSSING LINE.

The STOP LINE should be located **not more than 15m** or **less than 1,2 m** from the line representing the continuation of the edge of the intersecting roadway

See slides 111 and 118

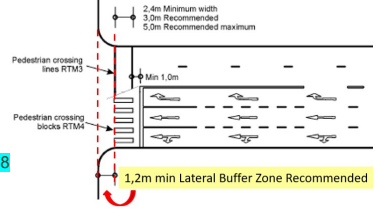
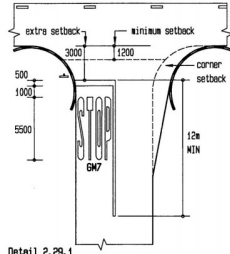


Figure 4.5: Pedestrian crossing road markings at a junction

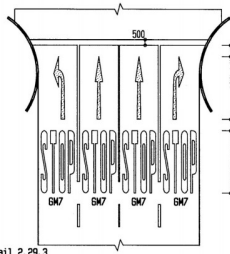
417

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM



Detail 2.29.1
STOP Line



Detail 2.29.3
STOP Word Marking GM7

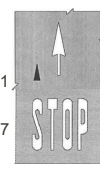
418

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM

The marking of the word "STOP", with or without INFORMATION ARROW marking GM4.1, in advance of a stop line may be used as an optional additional marking when sight distance to the STOP sign R1, is unavoidably poor.

It is **recommended** that the word "STOP" in the standard WORD markings **GM7** be marked on the road surface approximately 1 m in advance of the STOP LINE marking RTM1 when used in conjunction with a STOP sign R1.

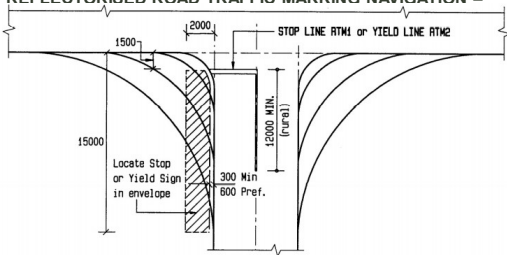


See dimensions SADC RTSM
Vol 4 fig 12.44

419

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM



Detail 2.13.2 Position of Stop or Yield Signs and Markings

Fig 2.13
STOP and YIELD Sight Distance Considerations

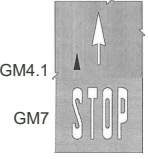
420

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM

The marking of the word "STOP", with or without INFORMATION ARROW marking **GM4.1**, in advance of a stop line may be used as an optional additional marking when sight distance to the STOP sign R1, is unavoidably poor.

It is recommended that the word "STOP" in the standard WORD markings **GM7** be marked on the road surface approximately 1 m in advance of the STOP LINE marking RTM1 when used in conjunction with a STOP sign R1.



GM4.1

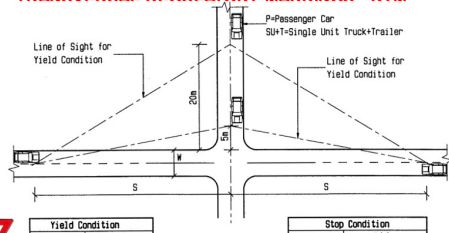
GM7

See dimensions SADC RTSM Vol 4 fig 12.44

421

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM



Line of Sight for Yield Condition

Line of Sight for Stop Condition

Speed-main Road (km/h)	S (m)	P	SU+T
60	95	140	
80	130	185	
100	155	230	
120	190	280	

Speed-main Road (km/h)	S (m)	P	SU+T
60	120	250	
80	160	330	
100	195	420	
120	235	500	

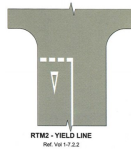
References V1 2.2.6 V4 2.2.5 Yield

Detail 3.1.1 Basic Sight Distance Criteria (Ref: Volume 1 - Chapter 2)

422

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM2 YIELD LINE



RTM2 - YIELD LINE
Ref: Vol 1 2.2.2

A **YIELD LINE** regulatory marking **RTM2** imposes a mandatory requirement upon drivers of vehicles that they shall yield right-of-way at the point marked by the line:

- (a) to all traffic on the public road which is joined by the road on which they are travelling,
- (b) to all rail traffic on the railway line which is crossed by the road on which they are travelling;
- (c) to pedestrians and/or cyclists crossing the roadway, or waiting to cross the roadway at a crossing marked with PEDESTRIAN CROSSING LINES marking RTM3 and/or BLOCK PEDESTRIAN CROSSING marking RTM 4;

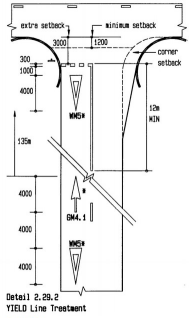
A **YIELD LINE** shall comprise a broken white line with a minimum width of **300 mm in urban areas** and **500 mm in rural or other areas**.

423

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS - RTM2 YIELD LINE

It is recommended that the **YIELD CONTROL AHEAD** marking **WM5** be marked on the road surface approximately 1min advance of the YIELD LINE marking RTM2. **YIELD CONTROL AHEAD** marking WM5, with or without INFORMATION ARROW marking **GM4.1**, may be used as an optional additional marking when sight distance to the YIELD sign R2 is limited (see Subsections 7.3.5 and 7.4.4 and Volume 2).



Detail 2.29.2
YIELD Line Treatment
Fig 2.29
Multi-Lane Junction Special Aspects

424

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS – RTM3 PEDESTRIAN LINES

AnFab Consult Copyright Reserved

425

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS – RTM3 PEDESTRIAN LINES

A **PEDESTRIAN CROSSING LINES** regulatory marking **RTM3** imposes a mandatory requirement that drivers of vehicles shall yield right-of-way, by slowing down or stopping if need be to so yield, to a pedestrian who is crossing the roadway or a portion of roadway, or to a pedestrian waiting to cross the roadway, AND regulatory marking **RTM3** imposes a mandatory requirement that **pedestrians shall only cross the roadway within the crossing defined by the markings** and the edges of the roadway and/or median or other traffic island (if such are provided)

PROVIDED that:

AnFab Consult Copyright Reserved

426

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS – RTM3 PEDESTRIAN LINES

PROVIDED that:

(a) if such **PEDESTRIAN CROSSING LINES** marking **RTM3** is used in conjunction with a road sign or traffic signal, or **STOP LINE** marking **RTM1** or **YIELD LINE** marking **RTM2** the significance of these road traffic signs shall take precedence;

(b) pedestrians are crossing the roadway or portion of roadway in accordance with the prescribed indications of a traffic signal when such is provided.

PEDESTRIAN CROSSING LINES markings shall always comprise two continuous white lines. These lines shall be a minimum of 100 mm wide and shall be placed **at least 2,4 m apart**.

AnFab Consult Copyright Reserved

427

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
TRANSVERSAL REGULATORY MARKINGS – RTM4 BLOCK PEDESTRIAN CROSSING

A **BLOCK PEDESTRIAN CROSSING** regulatory marking **RTM4** imposes a mandatory requirement that drivers of vehicles shall yield right-of-way, by slowing down or stopping if need be to so yield, to a pedestrian who is crossing the roadway or a portion of roadway, or to a pedestrian waiting to cross the roadway, AND regulatory marking **RTM4** imposes a mandatory requirement that pedestrians shall only cross the roadway within the crossing defined by the markings and the edges of the roadway and/or median or other traffic island (if such are provided).

AnFab Consult Copyright Reserved

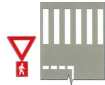
428

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

TRANSVERSAL REGULATORY MARKINGS – RTM4 BLOCK PEDESTRIAN CROSSING

PROVIDED that:



- (a) if such BLOCK PEDESTRIAN CROSSING marking RTM4 is used in conjunction with a road sign or traffic signal, or STOP LINE marking RTM1 or YIELD LINE marking RTM2 the significance of these road traffic signs shall take precedence;
- (b) pedestrians are crossing the roadway or portion of roadway in accordance with the prescribed indications of a traffic signal when such is provided.

BLOCK PEDESTRIAN CROSSING markings shall comprise a number of rectangular white painted markings of minimum length **2,4 m** and minimum width **600 mm**, spaced **600 mm** apart which shall extend across the full width of the roadway or portion of roadway.



AnFab Consult Copyright Reserved

429

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE

A NO OVERTAKING LINE regulatory marking RM1 imposes a mandatory requirement that drivers of vehicles, when such marking is used to the left of, or in place of, a DIVIDING LINE marking WM3 to demarcate those portions of a roadway used by traffic travelling in opposite directions, shall:

- (a) not drive a vehicle in such a manner that it is on the right side of such marking; and
- (b) not drive a vehicle in such a manner that it or any part of such vehicle crosses the NO OVERTAKING LINES marking;



RM1 - NO OVERTAKING LINE

Ref. Vol 1-7.2.5

AnFab Consult Copyright Reserved

430

ROAD TRAFFIC MARKINGS

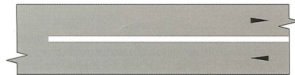
SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE

UNLESS the vehicle is driven:

- (i) to gain direct access to any land on the opposite side of the NO OVERTAKING LINE;
- (ii) to gain direct access from any land to that portion of the roadway on the opposite side of the NO OVERTAKING LINE;
- (iii) to pass a stationary obstruction in the roadway;

PROVIDED that, in all instances it is safe to do so.



RM1 - NO OVERTAKING LINE

Ref. Vol 1-7.2.5

AnFab Consult Copyright Reserved

431

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –

LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE



AnFab Consult Copyright Reserved

432



ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE

TABLE 7.4

Design Speed (km/h)	Minimum Barrier Sight Distance (m)
50	150
60	180
80	250
100	300
120	400

TABLE 7.4

NOTES:

(1) Methods of determining the available Barrier Sight Distance are illustrated in Figures 7.4 and 7.5.

434

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE

TABLE 7.5

Condition	Length (m)	
	Prescribed Min. ⁽¹⁾	Recommended Min.
Urban junction	9	18
Urban junction - traffic signal or uncontrolled approach	9	18 or 27 ⁽³⁾
Urban junction - STOP or YIELD controlled approach	9	18
Rural junction	12	24
Rural junction - uncontrolled approach	12	24 to 60 ⁽⁴⁾
Rural junction - STOP or YIELD controlled approach	12	24
Rolling terrain/curving roadway	N/A	150
Mountainous terrain	N/A	60

TABLE 7.5

NOTES:

(1) The prescribed values apply ONLY PROVIDED a NO OVERTAKING LINE has been warranted and there is sufficient surfaced roadway to which the marking may be applied.

(2) All lengths are a whole number of the relevant markings MODULE lengths.

(3) A length of 27 m is preferred for multi-lane approaches. Greater lengths may be used.

(4) MINIMUM length should be increased with increased operating speed. Greater lengths may be used.

435

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM2 NO OVERTAKING LINE

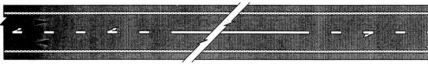
No Overtaking Line No Crossing Line No Overtaking Line

Detail 7.3.3 Three Line System

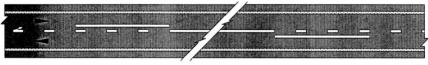
436

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1RM2 NO OVERTAKING LINE




Detail 7.3.1 Single Line System



Detail 7.3.2 Hybrid System

No Overtaking Line No Crossing Line No Overtaking Line




Detail 7.3.3 Three Line System

437

ROAD TRAFFIC MARKINGS

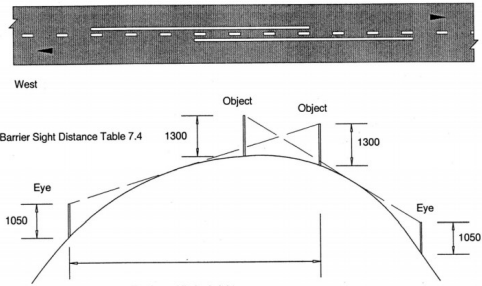
SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM2 NO CROSSING LINE



438

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE



West

Minimum Barrier Sight Distance Table 7.4

1300

Object

Object

1300

Eye

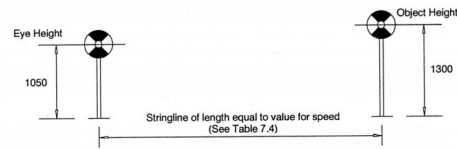
1050

Eastbound limited sight zone

439

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE



Eye Height

1050

Object Height

1300

Stringline of length equal to value for speed
(See Table 7.4)


NOTES:

- (1) It should be noted that the need for NO OVERTAKING LINES, applied to both directions of travel, will result in sections of NO CROSSING LINE (see Figure 7.3).
- (2) The assessment should be carried out for vertical and horizontal curvature at the same time. The recommended minimum distance between successive lengths of NO OVERTAKING LINE or NO CROSSING LINE is 120 m. This separation is relevant whether the consecutive lengths of NO OVERTAKING LINE are in the same direction or in opposite directions. The adequacy of this distance should be checked by an engineering assessment involving all factors relevant to a specific site.
- (3) The detail in Figure 7.5 illustrates the effect of Minimum Barrier Sight Distance applied to a horizontal curve. It is recommended that this assessment be based on a line of sight not encroaching beyond the shoulder breakpoint. This makes allowance for occasional encroachment of vegetation beyond the normal clear cut-line.

440

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM2/RM1 NO CROSSING/ NO OVERTAKING LINE

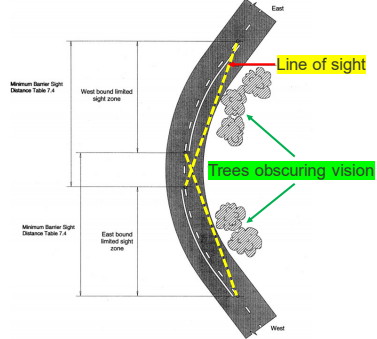


AnFab Consult Copyright Reserved

441

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM1 NO OVERTAKING LINE

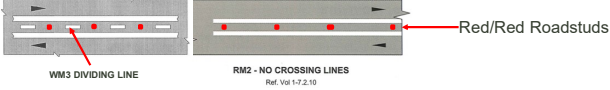


AnFab Consult Copyright Reserved

442

ROAD TRAFFIC MARKINGS

SADC – RTSM - Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions) SARTSM Volume 2 Chapters 2&3.
LONGITUDINAL REGULATORY MARKINGS – RM2 NO CROSSING LINE



Red/Red Roadstuds

A **NO CROSSING LINES** regulatory marking **RM2** imposes a mandatory requirement that drivers of vehicles shall:

- (a) not drive a vehicle in such a manner that it is on the right side of such markings; and
- (b) not drive a vehicle in such a manner that it or any part of such vehicle crosses the NO CROSSING LINES markings;


UNLESS the vehicle is driven to pass any stationary obstruction in the roadway and **it is safe to do so**.

AnFab Consult Copyright Reserved

443

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGITUDINAL REGULATORY MARKINGS – RM2 NO CROSSING LINE




AnFab Consult Copyright Reserved

444

ROAD TRAFFIC MARKINGS

SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
LONGUTUDINAL REGULATORY MARKINGS – RM2 NO CROSSING LINE




AnFab Consult Copyright Reserved

445

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3
**LONGUTUDINAL REGULATORY MARKINGS –
RM3 – CHANNELIZING LINE**



A **CHANNELIZING LINE** regulatory marking **RM3** imposes a mandatory requirement that drivers of vehicles shall not drive a vehicle in such a manner that it, or any part of it, crosses such a marking.

A CHANNELIZING LINE shall only be used between streams of **vehicles travelling in the same direction**.

With the exception of this factor a CHANNELISING LINE has **the same significance as a NO CROSSING LINE** marking RM2


In effect a CHANNELISING LINE also functions as a **NO OVERTAKING LINE** for vehicles travelling in the same direction on a multi-lane roadway

AnFab Consult Copyright Reserved

446

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3
**LONGUTUDINAL REGULATORY MARKINGS –
RM3 – CHANNELIZING LINE**



A CHANNELISING LINE shall comprise a continuous solid white line with a **minimum width of 200mm** except when used on one side of a LANE LINE marking GM1 when a minimum width of 150 mm may be used, and when used as a "Stacking Line" when a minimum width of 100 mm may be used.

A width of **300 mm** and a minimum length of 60 m are recommended for roads with operating speeds of **over 80 km/h**

AnFab Consult Copyright Reserved

447

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3
**LONGUTUDINAL REGULATORY MARKINGS –
RM3 – CHANNELIZING LINES**



AnFab Consult Copyright Reserved

448

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

**LONGITUDINAL REGULATORY MARKINGS –
RM3 – CHANNELIZING LINE**

A CHANNELIZING LINE should normally be preceded by a section of 200mm wide **CONTINUITY LINE marking WM2**.

449

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

**LONGITUDINAL REGULATORY MARKINGS –
YELLOW RM4.1 LEFT EDGE LINE and WHITE RM4.2 RIGHT EDGE LINE**

LEFT EDGE LINE and **RIGHT EDGE LINE**
regulatory markings RM4.1 and RM4.2
impose a mandatory requirement on drivers
of vehicles :

450

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

**LONGITUDINAL REGULATORY MARKINGS –
WHITE RM4.2 RIGHT EDGE LINE**

RIGHT EDGE LINES
NO CROSSING of RM4.2 allowed

451

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

**LONGITUDINAL REGULATORY MARKINGS –
YELLOW RM4.1 LEFT EDGE LINE**

(a) in the case of a **LEFT EDGE LINE** marking RM4.1 marked on a roadway with more than one lane in either or both directions of travel:

- (i) **not to drive** on the area {shoulder} **to the left** of such a line;
- (ii) **not to use** the area {shoulder} to the left of such a line for the purpose of **overtaking another vehicle**;
- (iii) to make every reasonable effort to move their vehicle completely **to the left** of such a line in the event of an **emergency stop**;

RM4.1 - LEFT EDGE LINE

452

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)

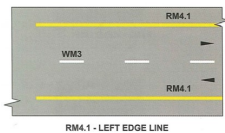
SARTSM Volume 2 Chapters 2&3

LONGITUDINAL REGULATORY MARKINGS – YELLOW RM4.1 LEFT EDGE LINE

A LEFT EDGE LINE shall comprise a continuous solid yellow line with a minimum width of 100 mm

A LEFT EDGE LINE may be used to demarcate the left-hand edge of the roadway, and a surfaced emergency RM4.2 shoulder between the roadway and the verge or kerb- line on the left-hand side of a roadway.

LEFT EDGE LINE markings should not be marked on the right hand side of one-way carriageways of urban or rural dual carriageways, including freeways. A RIGHT EDGE LINE marking RM4.2, shall be used for this purpose if required.



AnFab Consult Copyright Reserved

453

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)

SARTSM Volume 2 Chapters 2&3

LONGITUDINAL REGULATORY MARKINGS – YELLOW RM4.1 LEFT EDGE LINES – TWO WAY ROADS



Prohibition on driving on shoulder of public road, except in certain circumstances.

Regulation 298A. (1) Subject to sub regulation(2) and regulation 298(1), **no person shall drive** a motor vehicle on the shoulder of a public road. Notwithstanding sub-regulation (1), The driver of a motor vehicle **may, during the period between sunrise and sunset, drive such motor vehicle on the shoulder of a public road which is designated for one lane of traffic in each direction -**

- (a) While such motor is being overtaken by another vehicle; and
- (b) If he or she can do so without endangering himself or herself, other traffic, pedestrians or property on such public road;
- (c) If persons and vehicles upon a public road are clearly discernible at a distance of at least 150 metres



AnFab Consult Copyright Reserved

454

ROAD TRAFFIC MARKINGS

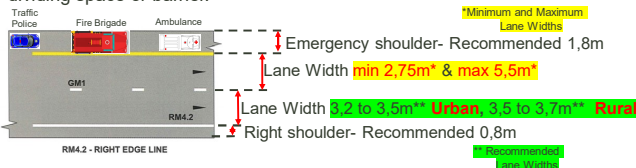
SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)

SARTSM Volume 2 Chapters 2&3

LONGITUDINAL REGULATORY MARKINGS – SHOULDER AND LANE WIDTHS

(b) in the case of a RIGHT EDGE LINE marking RM4.2 when such marking is used on the right edge of a one-way portion of roadway to demarcate a dividing space or barrier which is not protected by barrier or un mountable kerbs not to drive a vehicle in such a manner that it crosses such RIGHT EDGE LINE so as to travel on, over, across or within the median island, dividing space or barrier.



AnFab Consult Copyright Reserved

455

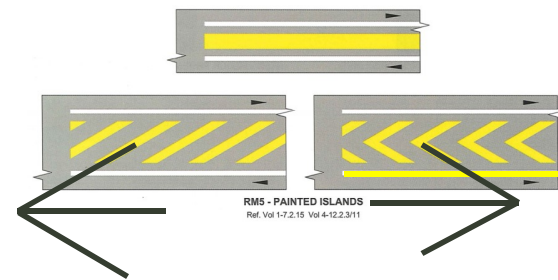
ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)

SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM5 PAINTED ISLANDS



AnFab Consult Copyright Reserved

456

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM6 PARKING BAYS

Full line markings Reduced line markings

RM6 - PARKING BAYS
Ref. Vol 1-7.2.17

AnFab Consult Copyright Reserved

457

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM7 EXCLUSIVE PARKING BAYS

A B L T F R D M S D P

Ambulance Bus Loading Taxi Fire Rickshaw Diplomat Minibus SOS Defence Police

RM7 and RM7.1 - EXCLUSIVE PARKING BAY
Ref. Vol 1-7.2.19 Vol 4-12.1.3 and 12.4.7 to 12.4.13

AnFab Consult Copyright Reserved

458

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM8 MANDATORY DIRECTION ARROWS

RM8.1 RM8.2 RM8.3 RM8.4 RM8.5 RM8.6

RM8 - MANDATORY DIRECTION ARROWS
Ref. Vol 1-7.2.20 Vol 4-12.3.2 to 12.3.4

AnFab Consult Copyright Reserved

459

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM8 MANDATORY DIRECTION ARROWS


AnFab Consult Copyright Reserved

460

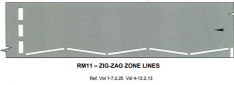
ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM11 ZIG ZAG ZONE LINES



RM11 No Overtaking Line
not Required




RM11 – ZIG-ZAG ZONE LINES
Ref. Vol 1-7.2.26 Vol 4-02.13

465

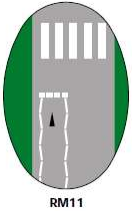
ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

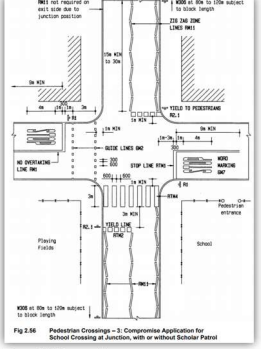
REGULATORY MARKINGS – RM11- ZIG-ZAG LINES AT SCHOOL ZONES



SCHOOL ZONE
40
SCHOOL DAYS
07:00-08:30
13:00-15:00



RM11

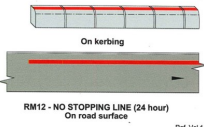


466

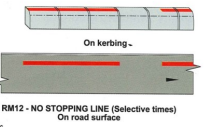
ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

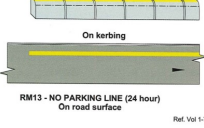
REGULATORY MARKINGS – RM12 NO STOPPING LINES AND RM13 NO PARKING LINES



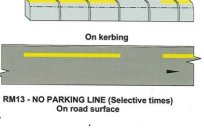
On kerbing
On road surface
RM12 - NO STOPPING LINE (24 hour)
Ref. Vol 1-7.2.26



On kerbing
On road surface
RM12 - NO STOPPING LINE (Selective times)
Ref. Vol 1-7.2.26



On kerbing
On road surface
RM13 - NO PARKING LINE (24 hour)
Ref. Vol 1-7.2.27

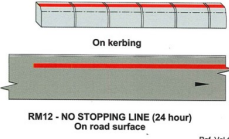


On kerbing
On road surface
RM13 - NO PARKING LINE (Selective times)
Ref. Vol 1-7.2.27

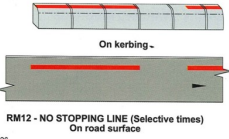
467

ROAD TRAFFIC MARKINGS

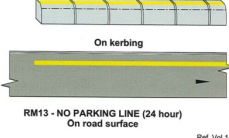
SADC – Road Traffic Signs Manual : ROADMARKING –
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
REFLECTORISED ROAD TRAFFIC MARKING NAVIGATION –
REGULATORY MARKINGS



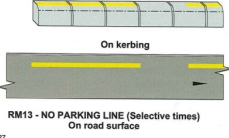
On kerbing
On road surface
RM12 - NO STOPPING LINE (24 hour)
Ref. Vol 1-7.2.26



On kerbing
On road surface
RM12 - NO STOPPING LINE (Selective times)
Ref. Vol 1-7.2.26



On kerbing
On road surface
RM13 - NO PARKING LINE (24 hour)
Ref. Vol 1-7.2.27



On kerbing
On road surface
RM13 - NO PARKING LINE (Selective times)
Ref. Vol 1-7.2.27

468

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM14 NO MOTORCYCLES MARKING





RM14 - NO MOTORCYCLES MARKING
Ref. Vol 1-7.2.28 Vol 4-12.4.2



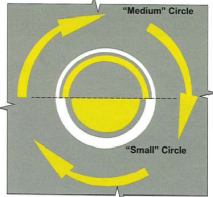
Proposed Speed Limit Marking

469


ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM15 TRAFFIC CIRCLE MANDATORY DIRECTION ARROWS



RM15 - TRAFFIC CIRCLE MANDATORY DIRECTION ARROWS
Ref. Vol 1-7.2.29 Vol 4-12.3.6/8



GM8 Black and White Kerb Marking required

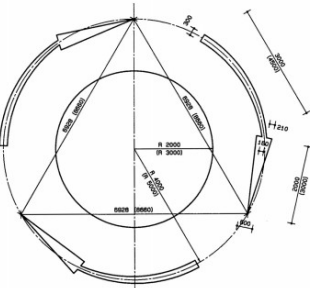
Yellow arrows required

470

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM15 TRAFFIC CIRCLE MANDATORY DIRECTION ARROWS



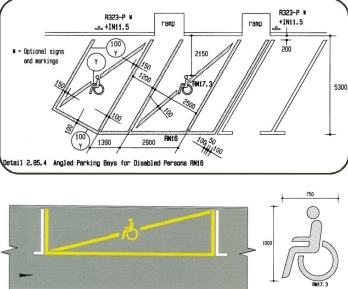
Dimensions which differ for 6 m diameter circle are given in brackets

471

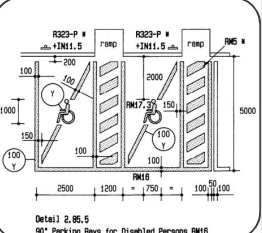
ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM16 DISABLED PERSONS PARKING BAY



RM16 - DISABLED PERSONS PARKING BAY
Ref. Vol 1-7.2.30 Vol 4-12.1.2 and 12.4.5



RM16 - DISABLED PERSONS PARKING BAY
Ref. Vol 1-7.2.30 Vol 4-12.1.2 and 12.4.5

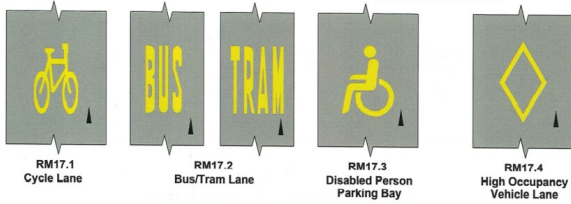
472

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM17 – EXCLUSIVE USE LANE/PARKING SYMBOLS



RM17 – EXCLUSIVE USE LANE/PARKING SYMBOLS

Ref. Vol 1-7.2.31 Vol 4-12.4.3/12.4.5/12.5.2



AnFab Consult Copyright Reserved

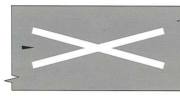
473

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM1 – RAILWAY CROSSING AHEAD



WM1 – RAILWAY CROSSING AHEAD

Ref. Vol 1-7.3.1 Vol 4-12.4.14



AnFab Consult Copyright Reserved

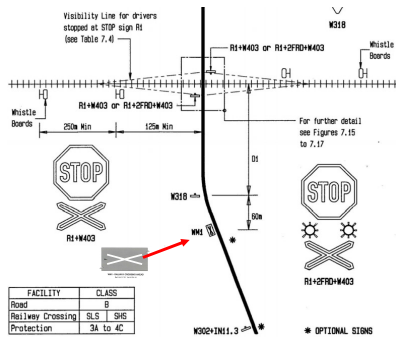
474

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM1 – RAILWAY CROSSING AHEAD



AnFab Consult Copyright Reserved

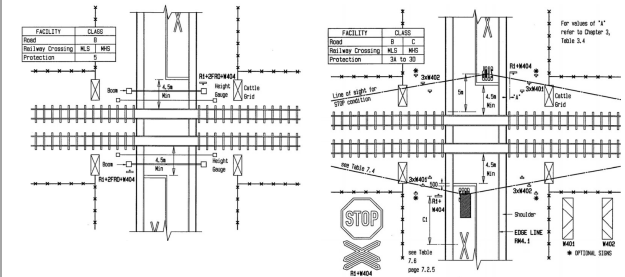
475

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM1 – RAILWAY CROSSING AHEAD



AnFab Consult Copyright Reserved

476

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM2 – CONTINUITY LINE

WM2 - CONTINUITY LINE
Ref: Vol 1:7.3.2

AnFab Consult Copyright Reserved

477

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM3 – DIVIDING LINE

WM3 - DIVIDING LINE
Ref: Vol 1:7.3.3

AnFab Consult Copyright Reserved

478

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM4 – REVERSIBLE LANE LINES

Overhead rotating signs indicating BUS Contra Flow Lane during Morning Peak Hour

WM4 - REVERSIBLE LANE LINES
Ref: Vol 1:7.3.4

AnFab Consult Copyright Reserved

479

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM5 – YIELD CONTROL AHEAD

WM5 - YIELD CONTROL AHEAD
Ref: Vol 1:7.3.5

AnFab Consult Copyright Reserved

480

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM6 – LANE REDUCITON ARROWS

W215 Left Lane Ends
160m

3 sets of arrows minimum
48m spacings

WM6.1 WM6.2 WM6.3 WM6.4 WM6.5
WM6 - LANE REDUCITON ARROWS
Ref: Vol 1-7.3.7 Vol 4-12.3.2 to 12.3.4

481

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM6 – LANE REDUCITON ARROWS

482

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM7 – MANDATORY DIRECTION ARROW AHEAD

WM7.1 WM7.2 WM7.3 WM7.4 WM7.5 WM7.6
WM7 - MANDATORY DIRECTION ARROW AHEAD
Ref: Vol 1-7.3.7 Vol 4-12.3.2 to 12.3.4

483

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – RM8 & WM7 – MANDATORY DIRECTION ARROWS

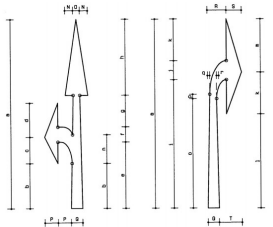
(Yellow) RM8.1 (White) WM7.1 RM8.2 WM7.2 RM8.3 WM7.3 RM8.4 WM7.4 RM8.5 WM7.5 RM8.6 WM7.6
Centre Lines for Arrows

484

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – RM8 & WM7 – MANDATORY DIRECTION ARROWS



Detail Dimensions


Operating speed km/h	Typical applications	Applications								
		a	b	c	d	e	f	g	h	i
30 - 40	City centre	2500	600	350	450	804	200	417	1800	1700
50 - 90	Urban/Rural expressway	4000	800	500	700	1400	300	600	1800	2700
100 - 120	Rural and freeways	5000	1000	700	900	1700	400	800	2000	3400
ALL	Special applications	7500	1800	1000	1300	2600	600	1200	3000	5100

485

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

REGULATORY MARKINGS – RM8 MANDATORY DIRECTION ARROWS




WM7 Arrows to be displayed in the beginning of the link

486

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM7 – MANDATORY DIRECTION ARROW AHEAD




487

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM7 – MANDATORY DIRECTION ARROW AHEAD



WM7 Arrows in line with GM1 lane line

488

ROAD TRAFFIC MARKINGS

SADC – RTSM :

**Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3**

WARNING MARKINGS – WM7 – MANDATORY DIRECTION ARROW AHEAD

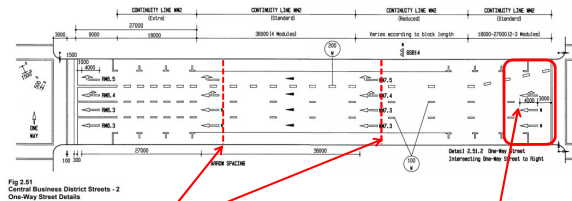


Fig 2.51
Central Business District Streets - 2
One-Way Street Details

WM7 Arrows to line up with broken lines

WM7 Arrows to be displayed in the beginning of the link



AnFab Consult Copyright Reserved

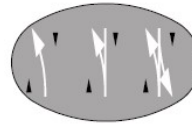
489

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM7 – MANDATORY DIRECTION ARROW AHEAD



WM8



AnFab Consult Copyright Reserved

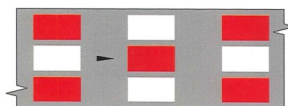
490

ROAD TRAFFIC MARKINGS

SADC – RTSM :

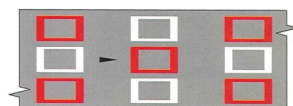
**Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3**

**WARNING MARKINGS –
WM9 – ARRESTOR BED AHEAD AND ESCAPE ROAD AHEAD**



WM9.1 - ARRESTOR BED AHEAD

Ref. Vol 1-7.3.8 Vol 4-12.2.14



WM9.2 - ESCAPE ROAD AHEAD

Ref. Vol 1-7.3.8 Vol 4-12.2.15



AnFab Consult Copyright Reserved

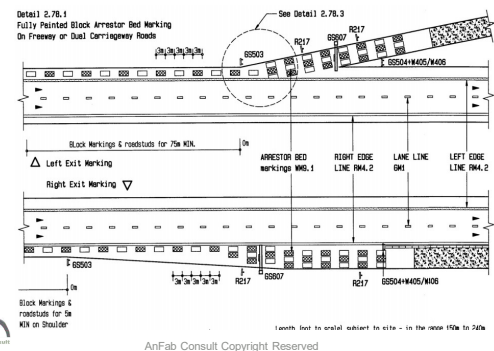
491

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

**WARNING MARKINGS –
WM9 – ARRESTOR BED AHEAD AND ESCAPE ROAD AHEAD**



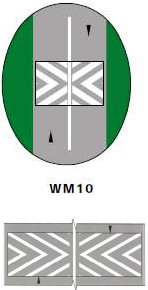

AnFab Consult Copyright Reserved

492

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM10 – SPEED HUMP

WM10

WM10 - SPEED HUMP
REF: Vol 1-7.4.1

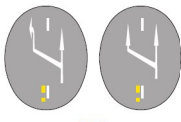

AnFab Consult Copyright Reserved

493

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

WARNING MARKINGS – WM11 – END OF EXCLUSIVE LANE ARROWS

WM11


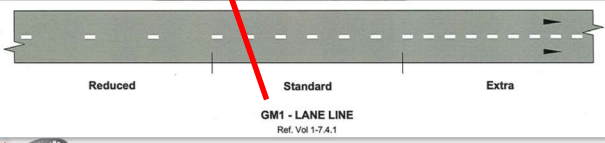
AnFab Consult Copyright Reserved

494

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM1 - LANE LINE

GM1 - LANE LINE
Ref. Vol 1-7.4.1

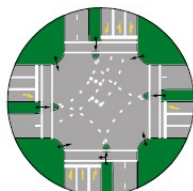
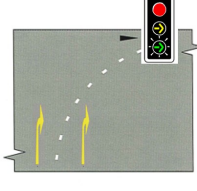
AnFab Consult Copyright Reserved

495

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM2 – GUIDELINES

GM2

Turning Guide Line

GUIDELINE guidance markings GM2 may be used to give additional guidance to road users within a junction. Use of the marking is **OPTIONAL**.

A GUIDE LINE marking shall comprise a broken white line with a minimum width of 100 mm and a line-to-gap ratio of 1 to 3 with dimensions of 500 mm and 1,5 m.

AnFab Consult Copyright Reserved

496

ROAD TRAFFIC MARKINGS

SADC – RTSM :

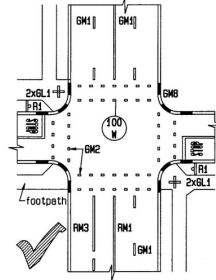
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM2 – PEDESTRIAN GUIDELINES

a Pair of parallel guide lines may be used at uncontrolled junctions, to guide pedestrians to a preferred crossing point when a formal pedestrian crossing is not warranted; such situations include:

i) footpath extensions in wide road reserves when the surfaced roadway(s) take up a small portion of the reserve;

(ii) turning roadways at channelised junctions to guide pedestrians on the most efficient or safe route through a complex junction



Detail 2.62.1
Don't Use RTM3 at Unsignalized Junctions



AnFab Consult Copyright Reserved

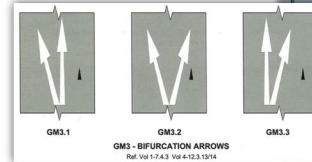
497

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM3 – BIFURCATION ARROWS



AnFab Consult Copyright Reserved

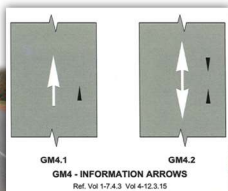
498

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM4 – INFORMATION ARROWS



AnFab Consult Copyright Reserved

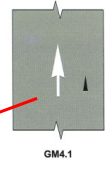
499

ROAD TRAFFIC MARKINGS

SADC – RTSM :

Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM4.1 – INFORMATION ARROWS




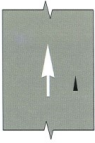
AnFab Consult Copyright Reserved

500

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM4.1 – INFORMATION ARROWS

GM4.1

GM4.1 – May be
Displayed to indicate
NEW ONE WAY

AnFab Consult Copyright Reserved

501

TRAFFIC MANAGEMENT

Road Traffic Markings




GM4.1

Guidance GM4.1 - AHEAD Direction Guidance

AnFab Consult Copyright Reserved

502

TRAFFIC MANAGEMENT

Road Traffic Markings




GM4.1

Guidance GM4.1 - AHEAD Direction Guidance

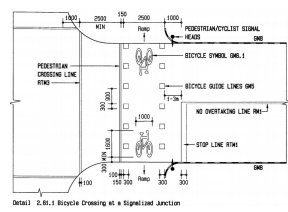
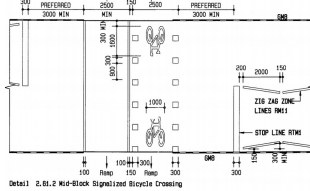
AnFab Consult Copyright Reserved

503

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM5 – BICYCLE GUIDE LINES

Detail 2.61.1 Bicycle Crossing at a Signalized Junction

Detail 2.61.2 Mid-Block Signalized Bicycle Crossing

GM5 - BICYCLE GUIDE LINES
Ref: Vol 1 7.2.4.4


AnFab Consult Copyright Reserved


504


ROAD TRAFFIC MARKINGS


SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3


GUIDANCE MARKINGS – GM6 – ROAD MARKING SYMBOLS




 GM6.1
Cycle Facility


 GM6.2
Airport


 GM6.3
Disabled Person Facility


 GM6.4
High Occupancy Vehicle


GM6 - ROAD MARKING SYMBOLS
Ref. Vol 1-7.4.8 Vol 4-12.5.1 to 12.5.9


505


ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM7 – WORD MARKINGS




 STOP


 SCHOOL



GM7 - WORD MARKINGS
Ref. Vol 1-7.4.8 Vol 4-12.5.1 to 12.5.9

506

ROAD TRAFFIC MARKINGS

SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

GUIDANCE MARKINGS – GM8 – KERBFACE MARKINGS


GM8 - KERBFACE MARKINGS
Ref. Vol 1-7.4.8

507

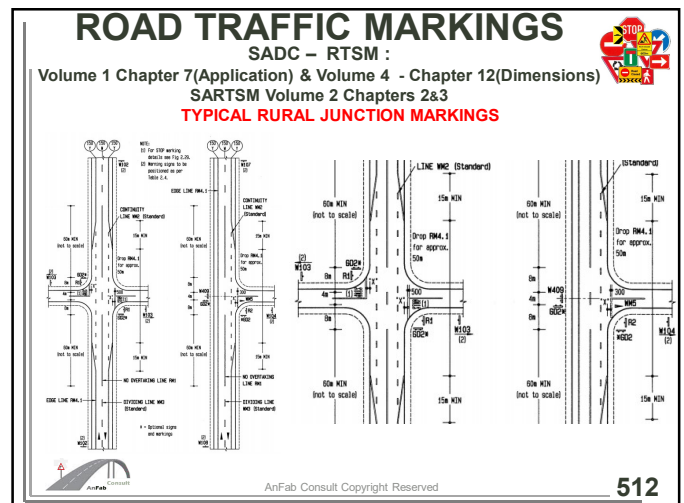
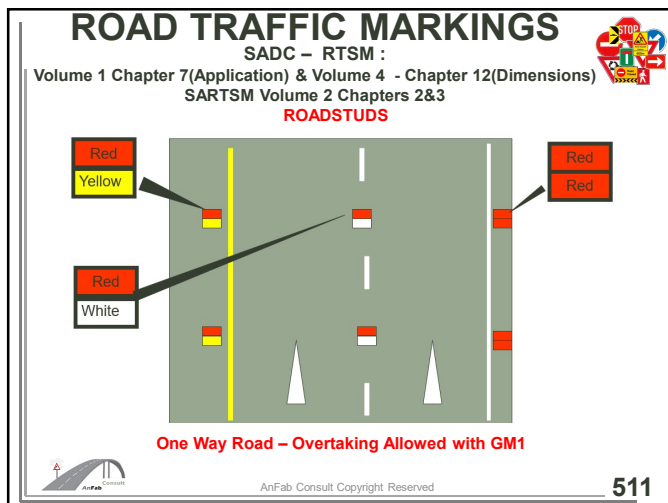
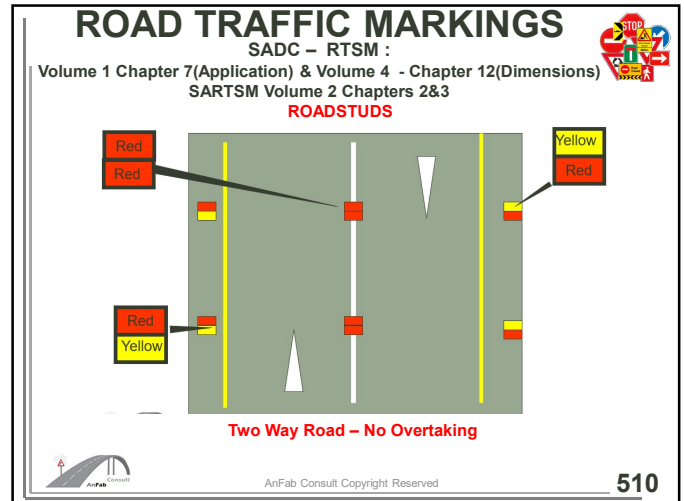
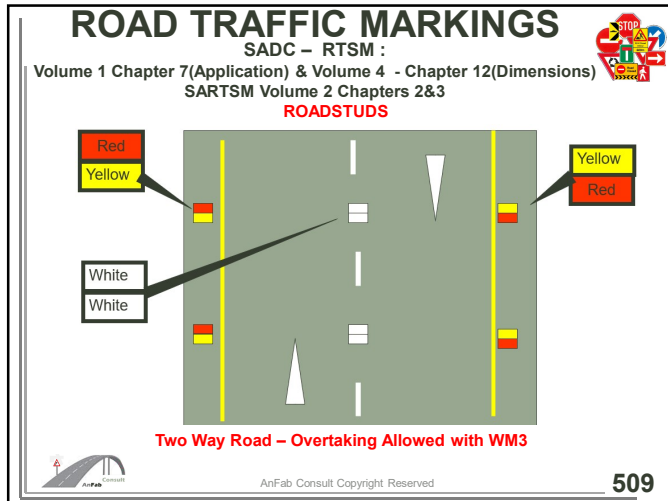
ROAD TRAFFIC MARKINGS

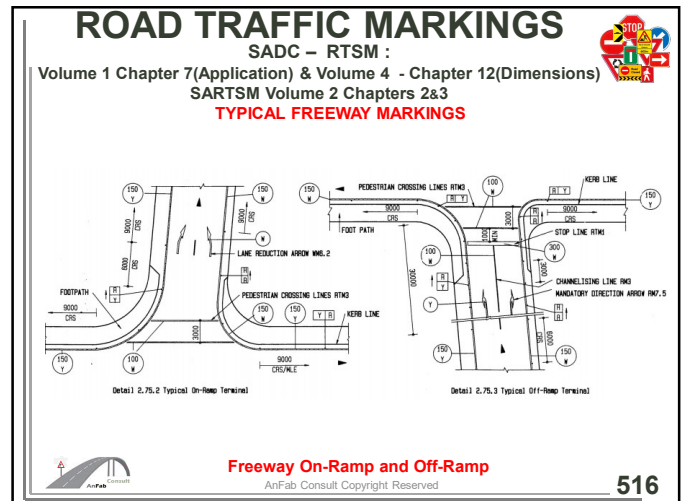
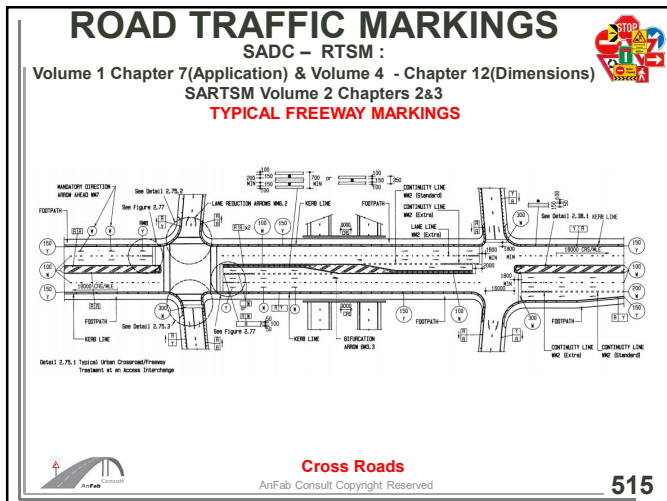
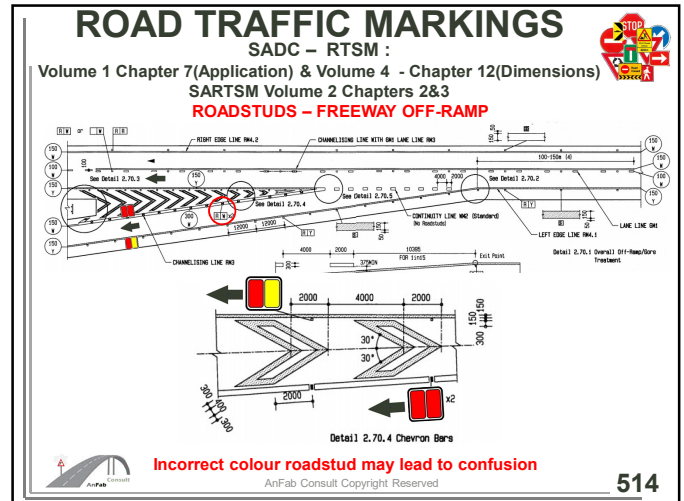
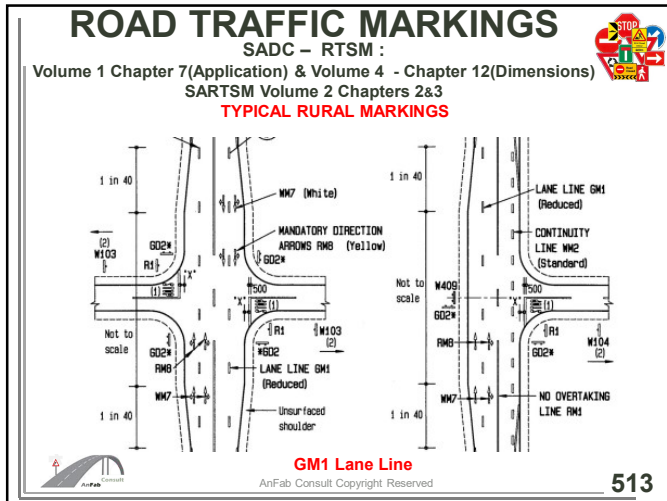
SADC – RTSM :
Volume 1 Chapter 7(Application) & Volume 4 - Chapter 12(Dimensions)
SARTSM Volume 2 Chapters 2&3

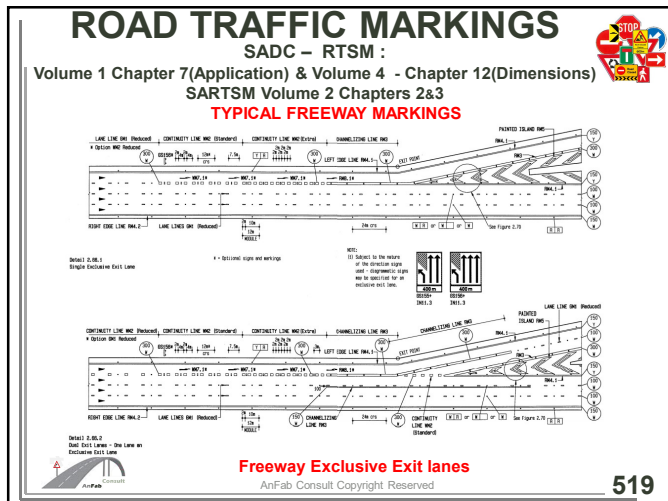
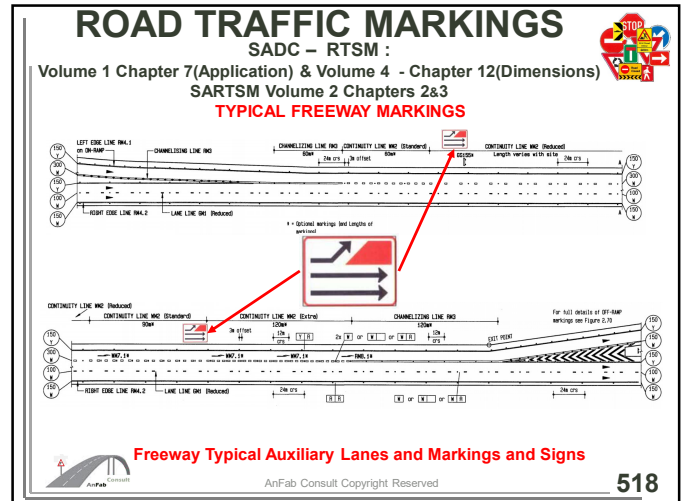
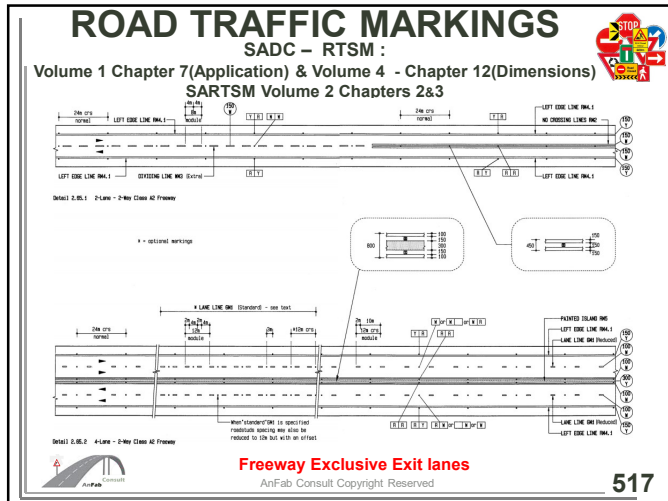
ROADSTUDS



508







ROAD TRAFFIC MARKINGS

TYPICAL RUMBLE STRIPS/FREEWAY MARKINGS



5mm Thick Hot Melt Thermoplastic Applied as per COSBI* dimensions
*COSBI= Control of speed by illusions(CSIR)



AnFab Consult Copyright Reserved

521

ROAD TRAFFIC MARKINGS

CSIR – CONTROL OF SPEED BY ILLUSION (COSBI) RUMBLE STRIP SPACING

SAL NUMBER	DISTANCE FROM				SAL NUMBER	DISTANCE FROM			
	PREVIOUS SAL METER	PREVIOUS SAL METER	TRAIL LINES METER	TRAIL LINES METER		PREVIOUS SAL METER	PREVIOUS SAL METER	TRAIL LINES METER	TRAIL LINES METER
0	0.00	0.00	48.00	48.00	47	4.06	147.51	219.51	219.51
1	3.00	3.00	49.00	49.00	48	4.10	147.51	219.51	219.51
2	6.00	6.00	50.00	50.00	49	4.13	147.51	219.51	219.51
3	9.00	9.00	51.00	51.00	50	4.16	147.51	219.51	219.51
4	12.00	12.00	52.00	52.00	51	4.19	147.51	219.51	219.51
5	15.00	15.00	53.00	53.00	52	4.22	147.51	219.51	219.51
6	18.00	18.00	54.00	54.00	53	4.26	147.51	219.51	219.51
7	21.00	21.00	55.00	55.00	54	4.29	147.51	219.51	219.51
8	24.00	24.00	56.00	56.00	55	4.32	147.51	219.51	219.51
9	27.00	27.00	57.00	57.00	56	4.35	147.51	219.51	219.51
10	30.00	30.00	58.00	58.00	57	4.38	147.51	219.51	219.51
11	33.00	33.00	59.00	59.00	58	4.41	147.51	219.51	219.51
12	36.00	36.00	60.00	60.00	59	4.44	147.51	219.51	219.51
13	39.00	39.00	61.00	61.00	60	4.47	147.51	219.51	219.51
14	42.00	42.00	62.00	62.00	61	4.50	147.51	219.51	219.51
15	45.00	45.00	63.00	63.00	62	4.53	147.51	219.51	219.51
16	48.00	48.00	64.00	64.00	63	4.56	147.51	219.51	219.51
17	51.00	51.00	65.00	65.00	64	4.59	147.51	219.51	219.51
18	54.00	54.00	66.00	66.00	65	4.62	147.51	219.51	219.51
19	57.00	57.00	67.00	67.00	66	4.65	147.51	219.51	219.51
20	60.00	60.00	68.00	68.00	67	4.68	147.51	219.51	219.51
21	63.00	63.00	69.00	69.00	68	4.71	147.51	219.51	219.51
22	66.00	66.00	70.00	70.00	69	4.74	147.51	219.51	219.51
23	69.00	69.00	71.00	71.00	70	4.77	147.51	219.51	219.51
24	72.00	72.00	72.00	72.00	71	4.80	147.51	219.51	219.51
25	75.00	75.00	73.00	73.00	72	4.83	147.51	219.51	219.51
26	78.00	78.00	74.00	74.00	73	4.86	147.51	219.51	219.51
27	81.00	81.00	75.00	75.00	74	4.89	147.51	219.51	219.51
28	84.00	84.00	76.00	76.00	75	4.92	147.51	219.51	219.51
29	87.00	87.00	77.00	77.00	76	4.95	147.51	219.51	219.51
30	90.00	90.00	78.00	78.00	77	4.98	147.51	219.51	219.51
31	93.00	93.00	79.00	79.00	78	5.01	147.51	219.51	219.51
32	96.00	96.00	80.00	80.00	79	5.04	147.51	219.51	219.51
33	99.00	99.00	81.00	81.00	80	5.07	147.51	219.51	219.51
34	102.00	102.00	82.00	82.00	81	5.10	147.51	219.51	219.51
35	105.00	105.00	83.00	83.00	82	5.13	147.51	219.51	219.51
36	108.00	108.00	84.00	84.00	83	5.16	147.51	219.51	219.51
37	111.00	111.00	85.00	85.00	84	5.19	147.51	219.51	219.51
38	114.00	114.00	86.00	86.00	85	5.22	147.51	219.51	219.51
39	117.00	117.00	87.00	87.00	86	5.25	147.51	219.51	219.51
40	120.00	120.00	88.00	88.00	87	5.28	147.51	219.51	219.51
41	123.00	123.00	89.00	89.00	88	5.31	147.51	219.51	219.51
42	126.00	126.00	90.00	90.00	89	5.34	147.51	219.51	219.51
43	129.00	129.00	91.00	91.00	90	5.37	147.51	219.51	219.51
44	132.00	132.00	92.00	92.00	91	5.40	147.51	219.51	219.51
45	135.00	135.00	93.00	93.00	92	5.43	147.51	219.51	219.51
46	138.00	138.00	94.00	94.00	93	5.46	147.51	219.51	219.51



AnFab Consult Copyright Reserved

522

ROAD TRAFFIC MARKINGS

TYPICAL RUMBLE STRIPS/FREEWAY MARKINGS



Painted Pre-Fabricated Strips for Construction Application



AnFab Consult Copyright Reserved

523

ROAD TRAFFIC MARKINGS

SPEED HUMP DEVICES




Motorcycle and Bicycle Safety Hazard




AnFab Consult Copyright Reserved


524



Complete assignment – Module 5




Please note the **slide number** with the question and forward to anfabconsult@gmail.com




AnFab Consult Copyright Reserved

525



MODULE 6 – W-SECTION GUARDRAILS



AnFab Consult Copyright Reserved

526



W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION

SPECIFICATIONS

1. BOLT:
HIGH TENSILE STEEL 16 Ø

2. WASHERS:
3mm THICK

3. SPACER BLOCK:
PINE OR GUM, PRESSURE IMPREGNATED IN ACCORDANCE WITH SANS 10005
WITH CREOSOTE WHICH COMPLIES WITH SANS 538 OR 539

4. POSTS:
150 Ø MIN - 230 Ø MAX, SALIGNA (BLUEGUM), PRESSURE IMPREGNATED
IN ACCORDANCE WITH SANS 10005 WITH CREOSOTE WHICH COMPLIES WITH
SANS 538 OR SANS 636

5. GALVANIZING:
GUARDRAILS (SANS 121/ISO 1461) TYPE A1 ARTICLES,
BOLTS AND WASHERS (SANS 121/ISO 1461) TYPE C1 ARTICLES,
6. TIMBER POSTS:
POSTS SHALL COMPLY WITH THE REQUIREMENTS OF SANS 457 AND SHALL
CARRY THE SANS MARK,
7. REFLECTIVE PLATES:
THE OUTER SURFACES SHALL BE COATED WITH ENGINEERING GRADE
RETRO-REFLECTIVE MATERIAL WHICH COMPLIES WITH THE
PROVISIONS OF CHS 191 IN THE COLOURS SHOWN ON DRAWING TO-R-GR-002

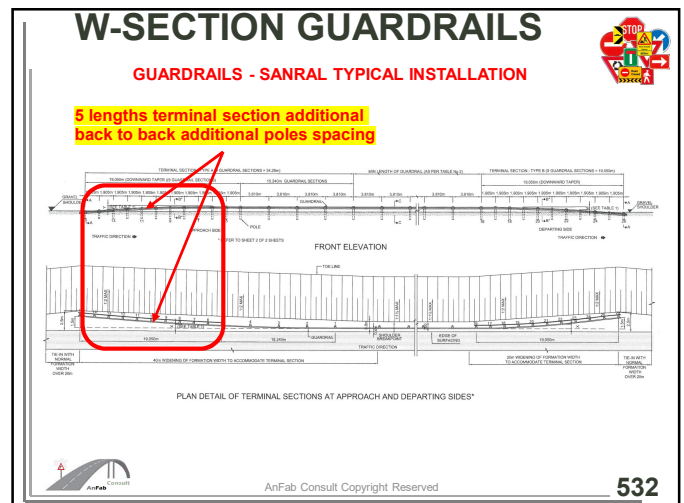
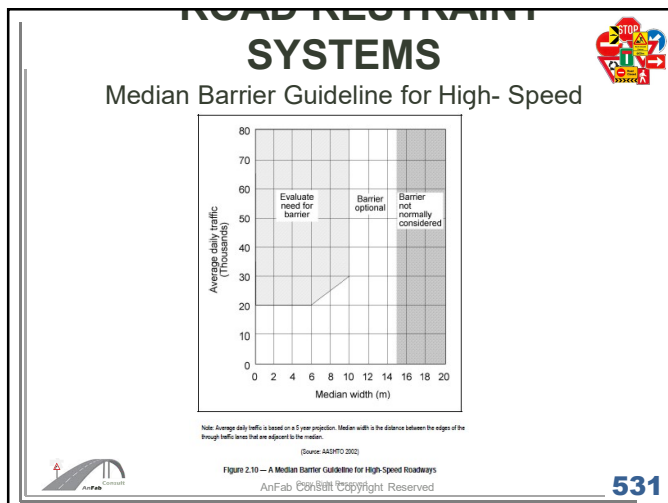
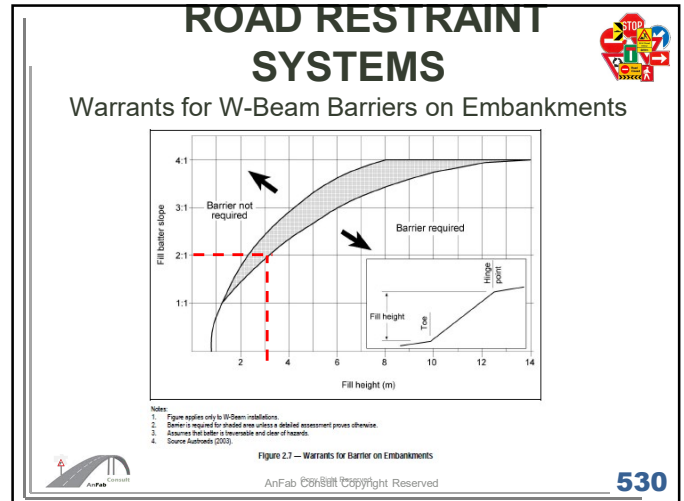
NOTE:

1. GUARDRAILS SHALL ONLY BE PLACED WHERE
REQUIRED BY THE ENGINEER.

2. ALL GUARDRAILS MUST BE GALVANIZED AS
SPECIFIED (NOT PAINTED).

AnFab Consult Copyright Reserved

529



GUARDRAILS



W- Section guardrail on creosoted timber posts with terminal end treatment

2013. 11. 08 10:06

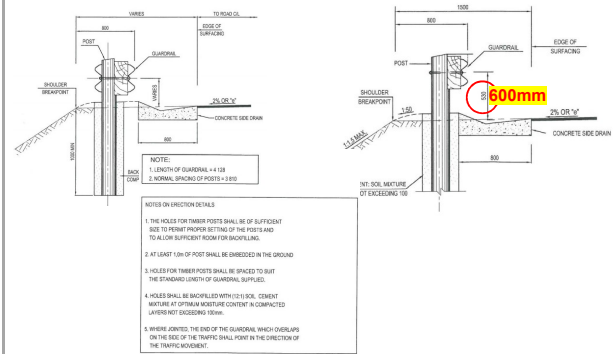
Semi - Rigid Barriers

AnFab Consult Copyright Reserved

533

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION



AnFab Consult Copyright Reserved

534

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION

NOTE:

1. LENGTH OF GUARDRAIL = 4 128
2. NORMAL SPACING OF POSTS = 3 810

NOTES ON ERECTION DETAILS

1. THE HOLES FOR TIMBER POSTS SHALL BE OF SUFFICIENT SIZE TO PERMIT PROPER SETTING OF THE POSTS AND TO ALLOW SUFFICIENT ROOM FOR BACKFILLING.
2. AT LEAST 1.0m OF POST SHALL BE EMBEDDED IN THE GROUND.
3. HOLES FOR TIMBER POSTS SHALL BE SPACED TO SUIT THE STANDARD LENGTH OF GUARDRAIL SUPPLIES.
4. HOLES SHALL BE BACKFILLED WITH (1:2:1) SOIL - CEMENT MIXTURE AT OPTIMUM MOISTURE CONTENT IN COMPACTED LAYERS NOT EXCEEDING 100mm.
5. WHERE JOINTED, THE END OF THE GUARDRAIL WHICH OVERLAPS ON THE SIDE OF THE TRAFFIC SHALL POINT IN THE DIRECTION OF THE TRAFFIC MOVEMENT.

GUARDRAIL WARRANT

1. WHERE THE ROAD IS IN FILL > 3.0m.
 2. WHERE THERE IS PERMANENT WATER ADJACENT TO THE ROADWAY.
 3. ON ALL BRIDGE APPROACHES.
 4. AT OBSTRUCTIONS 1.0m AWAY FROM THE SHOULDER BREAKPOINT.
 5. AT ANY DANGER POINT WHERE THE OFF-SHOULDER HAZARD IS GREATER THAN THE HAZARD OF THE GUARDRAIL.
- THE ABOVE CRITERIA ARE TO BE APPLIED WITH DISCRETION AND THE POSITION OF ALL GUARDRAILS MUST BE CONFIRMED WITH THE ENGINEER PRIOR TO THE ERECTION THEREOF.

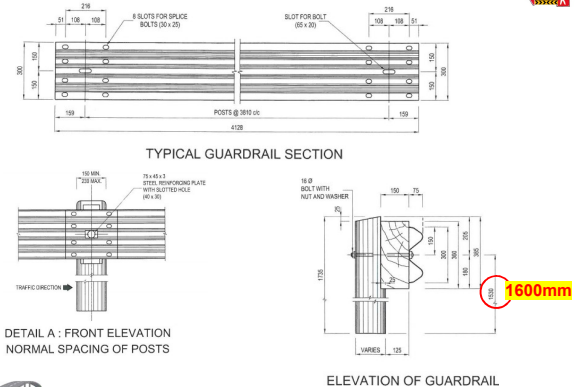


AnFab Consult Copyright Reserved

535

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION

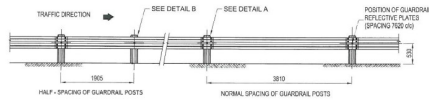


AnFab Consult Copyright Reserved

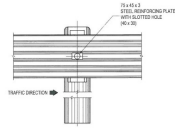
536

W-SECTION GUARDRAILS

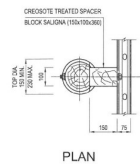
GUARDRAILS - SANRAL TYPICAL INSTALLATION



SPACING OF POSTS AND POSITION OF REFLECTIVE PLATES



DETAIL B: FRONT ELEVATION
HALF SPACING OF POSTS



PLAN

AnFab Consult Copyright Reserved

537

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION

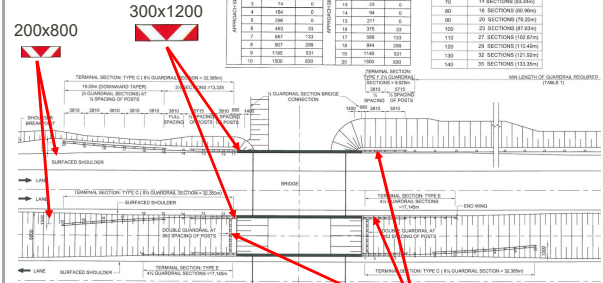


SETTING OUT POSITIONS OF GUARDRAIL POSTS

TERMINAL SECTION TYPE A			TERMINAL SECTION TYPE B		
POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)	POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)
1	0	0	11	0	0
2	19	0	12	60	33
3	74	0	13	240	133
4	164	0	14	540	299
5	296	0	15	960	531
6	463	33	16	1500	830
7	667	133			
8	907	299			
9	1185	531			
10	1500	830			

TABLE 1

DESIGN SPEED (km/h)	MINIMUM LENGTH OF GUARDRAIL REQUIRED EXCLUDING TERMINAL SECTIONS (m)
60	12 SECTIONS (40.7m)
70	14 SECTIONS (46.3m)
80	16 SECTIONS (52.9m)
90	18 SECTIONS (59.4m)
100	20 SECTIONS (65.9m)
110	22 SECTIONS (72.5m)
120	24 SECTIONS (79.0m)
130	26 SECTIONS (85.6m)
140	28 SECTIONS (92.1m)
150	30 SECTIONS (98.7m)



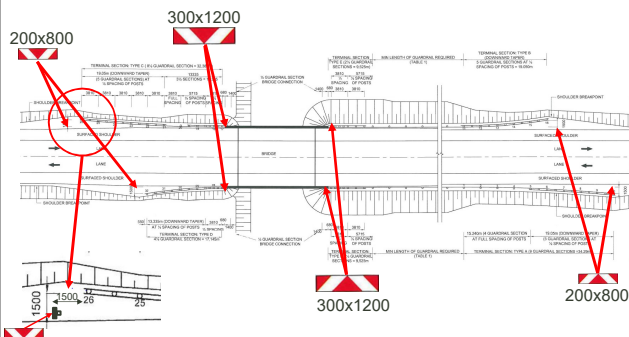
Double Sections
(Back to Back)

AnFab Consult Copyright Reserved

538

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION



AnFab Consult Copyright Reserved

539

W-SECTION GUARDRAILS

GUARDRAILS - SANRAL TYPICAL INSTALLATION



MINIMUM GUARDRAIL LENGTH
AT BRIDGES (FILL BELOW 3m)

BRIDGE APPROACH
SCALE 1 : 250

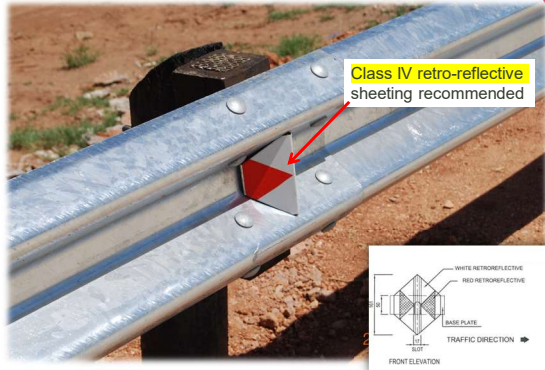
SETTING OUT POSITIONS OF GUARDRAIL POSTS

TERMINAL SECTION TYPE A			TERMINAL SECTION TYPE B			TERMINAL SECTION TYPE C			TERMINAL SECTION TYPE D		
POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)	POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)	POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)	POST No.	HORIZONTAL OFF-SET X(mm)	VERTICAL OFF-SET Y(mm)
1	0	0	11	0	0	17	0	0	27	0	0
2	19	0	12	60	33	18	0	0	28	0	0
3	74	0	13	240	133	19	23	0	29	94	52
4	164	0	14	540	299	20	94	0	30	375	208
5	296	0	15	960	531	21	211	0	31	844	487
6	463	33	16	1500	830	22	375	33	32	1500	830
7	667	133				23	596	133			
8	907	299				24	844	299			
9	1185	531				25	1148	531			
10	1500	830				26	1500	830			

AnFab Consult Copyright Reserved

540

GUARDRAILS

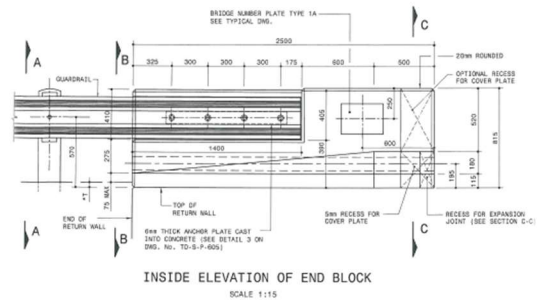


W-Section Guardrail Reflectors

AnFab Consult Copyright Reserved

541

GUARDRAILS



INSIDE ELEVATION OF END BLOCK
SCALE 1:15

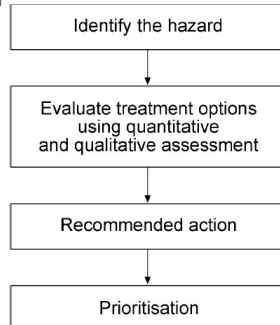
W Section Guardrails End Block Detail

AnFab Consult Copyright Reserved

542

ROAD RESTRAINT SYSTEMS

ASSESSING THE NEED FOR A BARRIER



AnFab Consult Copyright Reserved

543

ROAD RESTRAINT SYSTEMS

Containment Level Testing

Table 1 : Vehicle impact test criteria

Test	Impact speed km/h	Impact angle degrees	Total vehicle mass kg	Type of vehicle
TB 11	100	20	900	Car
TB 21	80	8	1 300	Car
TB 22	80	15	1 300	Car
TB 31	80	20	1 500	Car
TB 32	110	20	1 500	Car
TB 41	70	8	10 000	Rigid HGV
TB 42	70	15	10 000	Rigid HGV
TB 51	70	20	13 000	Bus
TB 61	80	20	16 000	Rigid HGV
TB 71	65	20	30 000	Rigid HGV
TB 81	65	20	38 000	Articulated HGV

AnFab Consult Copyright Reserved

544

ROAD RESTRAINT SYSTEMS

Table 2 : Containment levels

Containment levels	Acceptance test
Low angle containment	
T1	TB 21
T2	TB 22
T3	TB 41 and TB 21
Normal containment	
N1	TB 31
N2	TB 32 and TB 11
Higher containment	
H1	TB 42 and TB 11
H2	TB 51 and TB 11
H3	TB 61 and TB 11
Very high containment	
H4a	TB 71 and TB 11
H4b	TB 81 and TB 11

545

ROAD RESTRAINT SYSTEMS

Working Width

Table 4 : Levels of working width

Classes of working width levels	Levels of working width m
W1	$W \leq 0,6$
W2	$W \leq 0,8$
W3	$W \leq 1,0$
W4	$W \leq 1,3$
W5	$W \leq 1,7$
W6	$W \leq 2,1$
W7	$W \leq 2,5$
W8	$W \leq 3,5$

546

ROAD RESTRAINT SYSTEMS

Working Width

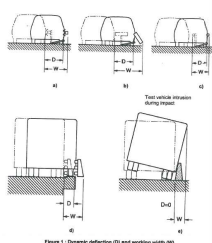


Figure 1 : Dynamic deflection (D) and working width (W)



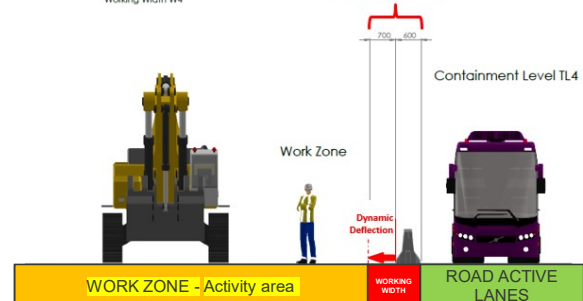
547

ROAD RESTRAINT SYSTEMS

Working Width

Working Width W4

Working Width W4



548

GUARDRAILS



Semi Rigid Connections to Rigid



AnFab Consult Copyright Reserved

549

GUARDRAILS



W Section guardrails without approved connection can be fatal!



AnFab Consult Copyright Reserved

550

GUARDRAILS



Wire Rope Barriers



Flexible Barriers

AnFab Consult Copyright Reserved

551

GUARDRAILS



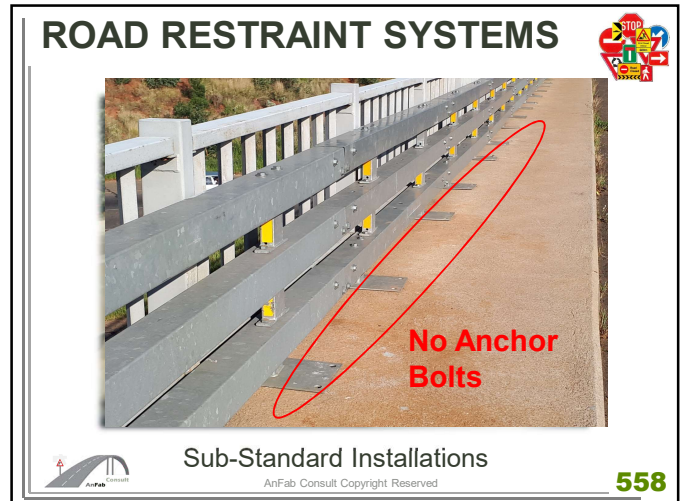
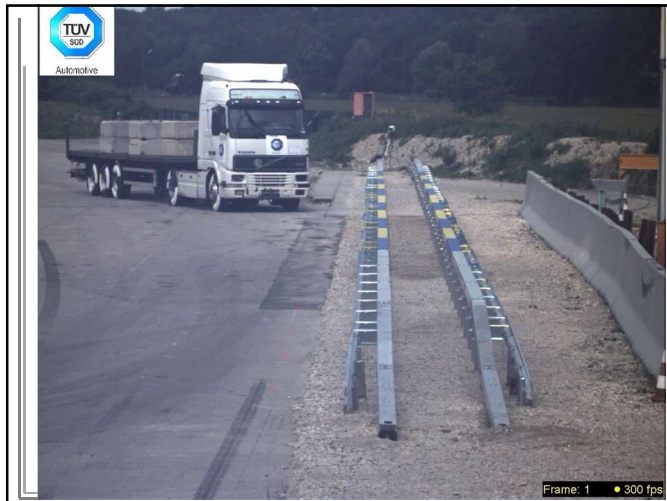
Crash Cushions



AnFab Consult Copyright Reserved

552





W-SECTION GUARDRAILS

GUARDRAILS – SUB STANDARD INSTALLATION



AnFab Consult Copyright Reserved

561**W-SECTION GUARDRAILS**

GUARDRAILS – SUB STANDARD INSTALLATION



AnFab Consult Copyright Reserved

562**W-SECTION GUARDRAILS**

GUARDRAILS – SUB STANDARD INSTALLATION



AnFab Consult Copyright Reserved

563**W-SECTION GUARDRAILS**

GUARDRAILS – SUB STANDARD INSTALLATION



AnFab Consult Copyright Reserved

564

W-SECTION GUARDRAILS

GUARDRAILS – SUB STANDARD INSTALLATION



AnFab Consult Copyright Reserved

565

W-SECTION GUARDRAILS

GUARDRAILS – CRASH CUSHION TESTING



AnFab Consult Copyright Reserved

566



Complete assignment – Module 6



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

568

MODULE 7 – FENCING ASSESSMENT



AnFab Consult Copyright Reserved

569

FENCING

COTO 11.5



This Section covers the erecting of new fences and associated works, the repair or improvement of existing fences and moving of existing fences where necessary along the boundaries of the road reserve and elsewhere as indicated on the drawings or as specified by the Engineer.

The requirement **to ensure the safety of road users** and protection of property and other rights of the public against access over property lines by vehicles, pedestrians and animals shall be enhanced by functional fences installed and maintained at the appropriate time and position.



AnFab Consult Copyright Reserved

570

FENCING

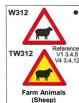
ANIMAL AND PEDESTRIANS



The FARM ANIMALS warning signs W310 (CATTLE), W311 (HORSES) and W312 (SHEEP) are to warn road users of the possible presence of cattle, horses or sheep either crossing or straying in the roadway ahead.



Signs W310, W311 or W312 should be displayed where straying live-stock may create a hazard.



The signs should be located in advance of such a section in accordance with the provisions of Figure 3.1. If the section is more than 2 km in length the distance should be displayed on a supplementary distance information plate, mounted on the same post below the main sign and the sign should be repeated at suitable intervals (see Section 3.6).



AnFab Consult Copyright Reserved

571

FENCING

ANIMAL AND PEDESTRIANS



Temporary warning signs TW310 (CATTLE), TW311 (HORSES) or TW312 (SHEEP) should be displayed in advance of regular live-stock crossings of the roadway. These signs should be portable and should be placed in position by the person tending the live-stock. They should be removed when the crossing activities are complete.



The portable signs should be located on each approach to the crossing point to be used, each at a distance as given by Table 3.1 or Figure 3.1 subject to a minimum of 150m.



The reverse side of portable signs shall be marked with black and yellow 150 mm horizontal stripes.



AnFab Consult Copyright Reserved

572

FENCING

ANIMAL AND PEDESTRIANS



W313
Wild Animals Ahead



W357
Elephant



W358
Warthog



W359
Hippo

WILD ANIMALS AHEAD warning signs W313 (GENERAL), W357 (ELEPHANT), W358 (WARTHOG), and W359 (HIPPO) are to warn road users of the possible presence of wild animals, or specifically elephant, warthogs or hippo straying in the roadway ahead.

Signs W313, W357, W358 and W359 should be displayed in advance of sections of roadway where straying wild animals create a hazard. If the hazard relates to wild animals in general, sign W313 should be used. If, however, a specific breed of animal is a problem the use of the appropriate sign W357, W358 or W359 is recommended.

The sign should be located in accordance with the provisions of Figure 3.1. If the section is more than 2 kilometres in length the distance should be displayed on a supplementary distance information plate, mounted on the same post below the main sign and the sign should be repeated at suitable intervals (see Section 3.6).

Temporary versions of signs W313, W357, W358 and W359 are **unlikely** to be used, but if required should be numbered and referred to as TW313, TW357, TW358 and TW359 respectively.



AnFab Consult Copyright Reserved

573

FENCING

ANIMAL AND PEDESTRIANS



W307
Pedestrians

The PEDESTRIANS warning sign W307 is to warn road users of the possible presence of above average numbers of pedestrians ahead.

Sign W307 is intended for use where a formal pedestrian crossing point has not been marked in accordance with the provisions of Chapter 7.

It should normally be reserved for areas or sections of road where pedestrian activities are significantly higher than normal.

This applies particularly in rural areas.

The use of a supplementary advisory speed plate, may be considered for use with PEDESTRIANS warning signs. I



AnFab Consult Copyright Reserved

574

FENCING

ANIMAL AND PEDESTRIANS



W307
Pedestrians

In addition, if the section of road on which pedestrian activities are significantly higher than normal exceeds 2 km the sign should be repeated at suitable intervals, not greater than 2 km apart. When used, a supplementary plate should be mounted below the warning sign on the same post (see Section 3.6).

Since sign W307 commonly refers to sections of road the location of the sign should be sited to result in the best possible visibility of the sign consistent with the provisions of Figure 3.1.

Temporary warning sign TW307 may be used under the same circumstances as permanent PEDESTRIANS warning signs if roadworks detours cross well used pedestrian routes.



AnFab Consult Copyright Reserved

575

FENCING

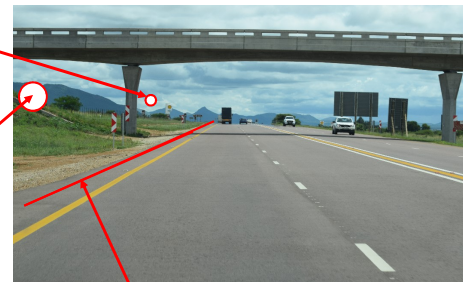
PROHIBITION OF PEDESTRIANS AND NO STOPPING ZONES



R218
No Pedestrians



R217
No Stopping



RM12 150mm NO STOPPING line



AnFab Consult Copyright Reserved

576

FENCING

PROHIBITION OF PEDESTRIANS AND NO STOPPING ZONES



Display distance "for" and
not recommended speed

Temporary signs should be displayed if fences are stolen.
The installations of fencing compulsory



AnFab Consult Copyright Reserved

577

FENCING

ANIMAL AND PEDESTRIANS



AnFab Consult Copyright Reserved

578

Complete assignment – Module 7



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

579

MODULE 8 – ROAD SURFACE ASSESSMENT



AnFab Consult Copyright Reserved

580


Section	_____
Sample Unit	_____
Area of Sample	_____

Distress Info

Distress Type <small>Choose one.</small>	<input type="checkbox"/> Alligator Cracking <input type="checkbox"/> Bleeding <input type="checkbox"/> Block Cracking <input type="checkbox"/> Bumps and Sags <input type="checkbox"/> Corrugation <input type="checkbox"/> Depression <input type="checkbox"/> Edge Cracking <input type="checkbox"/> JT Reflection Cracking <input type="checkbox"/> Land/Shldr Drop Off <input type="checkbox"/> Long and Trans Cracking	<input type="checkbox"/> Patching and Util Cut Patching <input type="checkbox"/> Polished Aggregate <input type="checkbox"/> Potholes <input type="checkbox"/> Railroad Crossing <input type="checkbox"/> Rutting <input type="checkbox"/> Shoving <input type="checkbox"/> Slippage Cracking <input type="checkbox"/> Swell <input type="checkbox"/> Weathering and Raveling <input type="checkbox"/> Other (specify below) _____
----------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Quantity _____

ROAD SURFACE
ROAD SURFACE INSPECTIONS (REGULAR) –
ADDITIONAL TO PAVEMENT MANAGEMENT SYSTEM



<input type="checkbox"/> Alligator Cracking <input type="checkbox"/> Bleeding <input type="checkbox"/> Block Cracking <input type="checkbox"/> Bumps and Sags <input type="checkbox"/> Corrugation <input type="checkbox"/> Depression <input type="checkbox"/> Edge Cracking <input type="checkbox"/> JT Reflection Cracking <input type="checkbox"/> Land/Shldr Drop Off <input type="checkbox"/> Long and Trans Cracking	<input type="checkbox"/> Patching and Util Cut Patching <input type="checkbox"/> Polished Aggregate <input type="checkbox"/> Potholes <input type="checkbox"/> Railroad Crossing <input type="checkbox"/> Rutting <input type="checkbox"/> Shoving <input type="checkbox"/> Slippage Cracking <input type="checkbox"/> Swell <input type="checkbox"/> Weathering and Raveling <input type="checkbox"/> Other (specify below) _____
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

 AnFab Consult Copyright Reserved

582

ROAD SURFACE
ROAD SURFACE INSPECTIONS







Cracking

 AnFab Consult Copyright Reserved

583

ROAD SURFACE
ROAD SURFACE INSPECTIONS





Rutting

 AnFab Consult Copyright Reserved

584

ROAD SURFACE

ROAD SURFACE INSPECTIONS



Check Night Time Hazards



AnFab Consult Copyright Reserved

585**ROAD SURFACE**

ROAD SURFACE INSPECTIONS



Shoulder maintenance



AnFab Consult Copyright Reserved

586**ROAD SURFACE**

ROAD SURFACE INSPECTIONS



Skid resistance and shoulder maintenance



AnFab Consult Copyright Reserved

587**ROAD SURFACE**

ROAD SURFACE INSPECTIONS



Bridge Joints, approach Slab and drainage



AnFab Consult Copyright Reserved

588

ROAD SURFACE AND SHOULDER

INSPECTIONS



Bridge Approach Slab Area



AnFab Consult Copyright Reserved

589

ROAD SURFACE AND SHOULDER

INSPECTIONS



Sub-Standard Patching and Uneven surfaces



AnFab Consult Copyright Reserved

590

ROAD SURFACE AND SHOULDER

INSPECTIONS



Uneven Surface at Bridge Approaches



AnFab Consult Copyright Reserved

591

ROAD SURFACE AND SHOULDER

SUB-STANDARD BRIDGE BALUSTRADE PROTECTION



Bridge Danger Plates Omitted



AnFab Consult Copyright Reserved

592

ROAD SURFACE AND SHOULDER INSPECTIONS



Grass cutting and prevention of veld fires

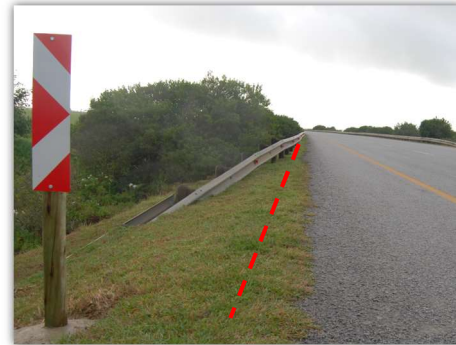


AnFab Consult Copyright Reserved

593

ROAD SURFACE

ROAD SURFACE INSPECTIONS



Shoulder hazard plates to indicate obstructions or high fills



AnFab Consult Copyright Reserved

594

Complete assignment – Module 8



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

595

MODULE 9 – RISK ASSESSMENT AND MITIGATION MEASURE INSTRUCTIONS



AnFab Consult Copyright Reserved

596

RISK ASSESSMENT CONSTRUCTION REGULATIONS



7.(1) Every contractor performing construction work shall before the commencement of any construction work and during construction work, cause a risk assessment to be performed by a competent person appointed in writing and the risk assessment shall form part of the health and safety plan to be applied on the site and shall include at least—

- (a) the identification of the risks and hazards to which persons may be exposed to;
- (b) the analysis and evaluation of the risks and hazards identified;
- (c) a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
- (d) a monitoring plan; and
- (e) a review plan.

(2) A contractor shall ensure that a copy of the risk assessment is available on site for inspection by an inspector, client, client's agent, contractor, employee, representative trade union, health and safety representative or any member of the health and safety committee.



AnFab Consult Copyright Reserved

597

RISK ASSESSMENT



elRellano.com



AnFab Consult Copyright Reserved

598

RISK ASSESSMENT



AnFab Consult Copyright Reserved

599

RISK ASSESSMENT



RISK ASSESSMENT



RISK ASSESSMENT



Leeuwpn 2014-05-22 Stopped train



AnFab Consult Copyright Reserved

602

RISK ASSESSMENT

Signs and Marking Accuracy and reflection



Pre-warning Area - Speed Kills



AnFab Consult Copyright Reserved

603

RISK ASSESSMENT



AnFab Consult Copyright Reserved

604

RISK ASSESSMENT

SIGNAGE COMPLIANCE

Night time inspections compulsory to check reflective sheeting visibility

Class I reflective sheeting WARRANTY expiry date **April 2018**



Sign manufacturing dates and reflective sheeting expiry dates

AnFab Consult Copyright Reserved

605

RISK ASSESSMENT

A RISK ASSESSMENT SHALL BE PERFORMED ON ALL SIGNS TO ENSURE COMPLIANCE

- ✓ Correct symbol
- ✓ Reflective sheeting expiry date
- ✓ Size
- ✓ Reading time available
- ✓ Reaction time available
- ✓ Vertical clearance
- ✓ Next replacement date



AnFab Consult Copyright Reserved

606

RISK ASSESSMENT

A RISK ASSESSMENT SHALL BE PERFORMED ON ALL ROADMARKING TO ENSURE COMPLIANCE

- ✓ Correct type
- ✓ Correct dimensions
- ✓ Colour
- ✓ Reading time available (day, night, rain and fog)
- ✓ Reaction time available
- ✓ Regular refection tests
- ✓ Maintenance prediction for next repainting



AnFab Consult Copyright Reserved

607

RISK ASSESSMENT

A RISK ASSESSMENT SHALL BE PERFORMED ON ALL ELEMENTS AND SAFETY CONTROL DEVICES TO ENSURE SAFE TRAFFIC AND PEDESTRIAN MOVEMENT

- ✓ Accident statistics
- ✓ Drainage
- ✓ Theft
- ✓ Vandalism
- ✓ Natural weathering
- ✓ Road geometry changes
- ✓ Claims



AnFab Consult Copyright Reserved

608

MITIGATION INSTRUCTIONS

ENGINEER RISK MANAGEMENT – PI Insurance

- ✓ Engineer to provide contractor with site instruction to rectify defects with immediate effect
- ✓ Contractor to reply back to engineer to confirm completed action
- ✓ Defects to be noted at safety meeting
- ✓ Project monthly meeting to report defect completion
- ✓ Investigate reason for defect
- ✓ Regular inspections and monitoring



AnFab Consult Copyright Reserved

609

Complete assignment – Module 9



Please note the **slide number** with the question and forward to anfabconsult@gmail.com



AnFab Consult Copyright Reserved

610

MODULE 10 – MAINTENANCE MANAGEMENT SYSTEMS



AnFab Consult Copyright Reserved

611

MANAGEMENT SYSTEMS

MANAGEMENT SYSTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL

- ✓ Site inspection
- ✓ Inventory
- ✓ Assessment
- ✓ Maintenance costing and budget
- ✓ Prioritizing
- ✓ Tender specifications and appointment
- ✓ Execution
- ✓ Monitoring and record keeping



AnFab Consult Copyright Reserved

612

MANAGEMENT SYSTEMS

MANAGEMENT SYTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL



Management has been defined differently by different authors. Most definitions, however, recognize management to be a process of influencing members of an organization and using organizational resources systematically to achieve stated organisational objectives.



AnFab Consult Copyright Reserved

613

MANAGEMENT SYSTEMS

MANAGEMENT SYTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL



The process consists of planning, organizing, leading and controlling elements that are applied in an integrated way. Management systems are therefore set up to guide the organization through this process to improve the likelihood of achieving the objectives.

Against this background it is necessary to clearly establish the objectives that would be pursued before the management system is set up.

For example management systems could be set up to provide information on the condition of the roadway system or roadside features or it could be set up to guide the maintenance of the roadway system or roadside features.



AnFab Consult Copyright Reserved

614

MANAGEMENT SYSTEMS

MANAGEMENT SYTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL



Information management systems normally include functions such as the development of infrastructure inventories and procedures for the updating thereof and for periodic or special report generation.

Maintenance management systems utilize the inventory information to identify deficiencies, prioritize maintenance needs, schedule maintenance efforts and to monitor conditions.



AnFab Consult Copyright Reserved

615

MANAGEMENT SYSTEMS

MANAGEMENT SYTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL



Depending on the objectives of the authority establishing a road traffic sign management system, a system should be set up in such a way that it can be developed into a sign maintenance management system.



AnFab Consult Copyright Reserved

616

MANAGEMENT SYSTEMS

MANAGEMENT SYSTEMS SHALL BE IN PLACE TO ASSESS THE ROAD NETWORK AND THE DEVELOPMENT OF A MAINTENANCE MODULE IS ESSENTIAL



Such a road maintenance management system could include the following components:

- (a) inventories of signs, signals, markings, road restraint systems, structures and fences;
- (b) inspections scheduled at pre-determined intervals to assess and evaluate the condition of the different elements;
- (c) maintenance needs determination relative to set standards;
- (d) costing of identified maintenance tasks;
- (e) determination of priorities;
- (f) execution sub-systems including task scheduling and cost allocation;
- (g) monitoring.



AnFab Consult Copyright Reserved

617

MANAGEMENT SYSTEMS

INVENTORIES



Inventories including road signs, traffic signals and road markings should be developed with the objective of providing information that will address some or all of the following applications:

- (a) assessing traffic control device adequacy and visibility;
- (b) analyzing the need to upgrade traffic control devices to meet uniformity and application standards;
- (c) providing the means to obtain information about traffic controls for continuous monitoring and adjustment to optimize traffic safety and operations;
- (d) planning of road sign, traffic signal and road markings improvement programmes;
- (e) controlling and optimizing field maintenance;
- (f) analyzing the effectiveness of various traffic control devices;
- (g) monitoring performance for specification development.



AnFab Consult Copyright Reserved

618

MANAGEMENT SYSTEMS

INSPECTION



Inspection of the different elements must be carried out periodically to assess their condition.

This can be done through visual inspection which results in subjective assessment or through more objective methods incorporating the use of sophisticated measurement equipment like retro-reflectometers.



AnFab Consult Copyright Reserved

619

MANAGEMENT SYSTEMS

NEEDS DETERMINATION



The determination of maintenance needs is done by comparing the results of the condition assessment with predetermined standards.

As use of a management system develops it can be one of the objectives of the system to assist the planning of maintenance well into the future.

This will involve the collection and incorporation of data suitable for the development of prediction models covering the deterioration of the different components in the system.



AnFab Consult Copyright Reserved

620

MANAGEMENT SYSTEMS

COSTING AND BUDGET



After identifying the maintenance needs it is necessary to estimate the resource requirements necessary to execute the identified tasks.

A more accurate and realistic determination of future funding requirements may be achieved using a well-developed prediction model.

This should enable an authority to budget adequate funding to cater for the longer-term deterioration of the system.



AnFab Consult Copyright Reserved

621

MANAGEMENT SYSTEMS

PRIORITIES



It is not unreasonable to expect that the cost of all identified maintenance tasks will exceed the available budget

Objective priorities depending on the importance of the task and of the road should be set.

The use of a prediction model may help to minimize any accumulative effect of annual budgetary shortfalls by providing effective motivation for maintenance funding well into the future, and not just from one year to the next.



AnFab Consult Copyright Reserved

622

MANAGEMENT SYSTEMS

EXECUTION



Execution sub-systems could include a wide range of activities like scheduling, procurement, inventory control and cost allocation, all at varying levels of sophistication.



AnFab Consult Copyright Reserved

623

MANAGEMENT SYSTEMS

MONITORING



The object of monitoring is to ensure that resources are being used in the manner intended and that the desired results are achieved.



AnFab Consult Copyright Reserved

624

MANAGEMENT SYSTEMS

IMPLEMENTATION OF MANAGEMENT SYSTEMS



Implementation of a Road Traffic Sign Maintenance Management System

Before implementing a road traffic sign maintenance management system certain basic issues should be carefully considered:

- ✓ The size of the work
- ✓ the level of detail to which analysis would be done within the maintenance management system;
- ✓ the existence of an unambiguous location referencing system;
- ✓ access to a computer system that is well supported by staff;
- ✓ centralization or decentralization of decision making;



AnFab Consult Copyright Reserved

625

MANAGEMENT SYSTEMS

IMPLEMENTATION OF MANAGEMENT SYSTEMS



- ✓ centralization or decentralization of decision making;
- ✓ existence of appropriate objective standards; (g) type of information needed from the system;
- ✓ updating of information;
- ✓ hierarchal needs of information;
- ✓ procedures for handling changes to the network.



AnFab Consult Copyright Reserved

626

MANAGEMENT SYSTEMS

IMPLEMENTATION OF MANAGEMENT SYSTEMS



It is therefore necessary that an authority set aside sufficient resources at the conception stage for it to investigate thoroughly a range of alternative strategies and exercise skill and professional judgement before embarking on a project that would have long term financial implications (see also Volume 2, Chapters 17 and 18)



AnFab Consult Copyright Reserved

627





Complete assignment – Module 10



Please note the **slide number** with the question and forward to anfabconsult@gmail.com



AnFab Consult Copyright Reserved

630

MODULE 11 – RECORD KEEPING FOR CLAIMS AND COURT CASES



AnFab Consult Copyright Reserved

631

RECORD KEEPING

RECORDS TO BE KEPT FOR AT LEAST 5 YEARS FOR POSSIBLE DILECTUAL CLAIMS AND REFERENCE

- ✓ Maintenance programmes and prediction module
- ✓ Inspection dates
- ✓ Defects mitigation instructions
- ✓ Risk analysis
- ✓ Accident statistics
- ✓ Daily reports on maintenance
- ✓ Traffic safety meetings
- ✓ Technical meetings
- ✓ Monthly meetings
- ✓ Accredited training programmes and attendance lists
- ✓ Quality management



AnFab Consult Copyright Reserved

632

RECORD KEEPING

Road Traffic Signs Maintenance Programmes and Inspections



- ✓ Maintenance programmes and prediction module
- ✓ Inspection dates
- ✓ Defects mitigation instructions
- ✓ Risk analysis
- ✓ Accident statistics
- ✓ Daily reports on maintenance
- ✓ Traffic safety meetings
- ✓ Technical meetings
- ✓ Monthly meetings
- ✓ Training programmes and attendance lists
- ✓ Quality management



AnFab Consult Copyright Reserved

633

RECORD KEEPING

Road Traffic Signs Maintenance Programmes and Inspections



- ✓ Maintenance programmes and prediction module
- ✓ Inspection dates
- ✓ Defects mitigation instructions
- ✓ Risk analysis
- ✓ Accident statistics
- ✓ Daily reports on maintenance
- ✓ Traffic safety meetings
- ✓ Technical meetings
- ✓ Monthly meetings
- ✓ Training programmes and attendance lists
- ✓ Quality management



AnFab Consult Copyright Reserved

634

DAILY RECORD KEEPING AND AUDIT



TYPICAL TRAFFIC ACCOMMODATION SIGN ASSESSMENT

Page 1 of 2

CONTRACT DETAILS

CONTRACT NUMBER :	
CONTRACT DESCRIPTION :	
CONTRACTOR :	
TRAFFIC SAFETY OFFICER:	
CONSULTANT : RE	

ROAD SECTION DESCRIPTION

ROAD NUMBER :		SECTION :	
ROAD NAME :			
BETWEEN :		AND :	
AUTHORITY :		SUBURB :	

DETAIL DESIGN

TRAFFIC ACCOMMODATION DESIGNED BY :	ECSA REG NO :
CHECKED BY :	DATE :



AnFab Consult Copyright Reserved

635

DAILY RECORD KEEPING AND AUDIT



INSPECTION DETAIL

DATE :	
NAME OF ASSESSOR :	
Photographs No's :	
Comments / Incidents for the past 24 hours	
Vehicle accidents	
Theft	
Construction damage	
Storm damage	
Weather Conditions : Rain (time / mm)	Good Weather :
Other Incidents (specify) :	

DRAWING DETAIL

Drawing No. :		Sign No's :	
Drawing No. :		Sign No's :	
Drawing No. :		Sign No's :	
Drawing No. :		Sign No's :	



AnFab Consult Copyright Reserved

636

DAILY RECORD KEEPING AND AUDIT



DRAWING DETAIL

Drawing No. :	Sign No's :
Drawing No. :	Sign No's :
Drawing No. :	Sign No's :
Drawing No. :	Sign No's :

REMEDIAL MEASURES REQUIRED

NO	YES (specify on reverse of page)
Comments	See reverse page

I, hereby certify that all specified signs and safety control devices were inspected and checked by me on / / 20 ... and comply as specified on the approved drawings.



AnFab Consult Copyright Reserved

637

RECORD KEEPING

Typical Road Traffic Signs Inspection Data



Typical Traffic Accommodation Sign Assessment													
National Road 11 Section 19 Chalmers 13.9 to 14.8 km - Road speed limit prior to construction works = 100km/h													
Component Part	Sign Number	Change	SADC Code	Description	Supplementary Sign Code and Description	Symbol Photo	Manufacturing date	Class reflecting Shading	Height (m)	Clear visibility distance (m)	Size	Transverse Clearance (m)	Vertical Clearance (m)
Advance Warning Area	1	W1-18 15.0 N	TW335 105	Roadworks 1km ahead	TN11.3		Jan-15	IV Fluorescent	120m	120m	1200 x 2000	800mm	1200mm
	2	W1-18 11.0 N	TR201 85	80km/h Speed limit	None		Jan-15	IV Fluorescent	120m	120m	1200 x 2000	800mm	2100mm
	3	W1-18 11.2 N	TG5104	1 lane closed	TN11.3		Jan-15	IV Fluorescent	120m	120m	1200 x 2000	800mm	1200mm
	4	W1-18 11.4 N	TR201 85	60km/h Speed limit	TN11.3		Jan-15	IV Fluorescent	120m	120m	1200 x 2000	800mm	2100mm
	5	W1-18 11.6 N	TG5104	Right Lane closed	TN11.3		Jan-15	IV Fluorescent	120m	120m	1200 x 2000	800mm	1200mm
Transition Area	6	W1-18 11.8 N	TW402	Delimitator	None		Feb-17	I	40m	40m	300 x 800	500mm	200mm
Relief Zone	7	W1-18 12.2 N	TR103 1	Lane closed (keep left)	None		Dec-09	I	120m	120m	1200 x 2000	800mm	1200mm
Termination Area	8	W1-18 14.8 N	TW335	Roadworks End	TN11.4		Feb-17	IV Fluorescent	120m	120m	1500 x 2000	800mm	2100mm
	9	W1-18 14.9 N	TR201 100	Speed limit	None		Jan-20	II	120m	120m	1200 x 2000	800mm	2100mm



AnFab Consult Copyright Reserved

638

RECORD KEEPING

Typical Road Traffic Signs Inspection Data



AnFab Consult Copyright Reserved

639

RECORD KEEPING

Kilometre Marker Boards as references



AnFab Consult Copyright Reserved

640

RECORD KEEPING

Training Attendance Lists



AnFab Consult Copyright Reserved

641

RECORD KEEPING

RECORDS SHALL BE REQUIRED IN THE CASE OF TORT AND CRIMINAL LIABILITY CLAIMS

- ✓ Site location
- ✓ Risk analysis
- ✓ Elements inspection lists and photographs
- ✓ Assessor / Inspector qualifications and competency
- ✓ Remedial measures
- ✓ Site instructions and monthly safety meetings
- ✓ Inspection safety certificates



AnFab Consult Copyright Reserved

642

Complete assignment – Module 11



Please note the **slide number** with the question and forward to anfabconsult@gmail.com



AnFab Consult Copyright Reserved

643

MODULE 12 – VEHICLE CRASH DATA COLLECTION



AnFab Consult Copyright Reserved

644

VEHICLE CRASH DATA COLLECTION



THE FOLLOWING ITEMS TO BE ASSESSED

- ✓ The site 1km in both directions
- ✓ Vehicle detail
- ✓ Driver detail



AnFab Consult Copyright Reserved

645

VEHICLE CRASH DATA COLLECTION



SITE INVENTORY

- ✓ Road traffic signs and markings
 - ☐ Speed limit
 - ☐ Clear visibility distances
 - ☐ Correct messages
 - ☐ Sufficient reaction time
 - ☐ Night-time visibility



AnFab Consult Copyright Reserved

646

VEHICLE CRASH DATA COLLECTION



VEHICLE INFORMATION

- ☐ Licence disc information
- ☐ Expire date
- ☐ Vehicle registration plates
- ☐ Damage
- ☐ Skid marks
- ☐ GVM and loads
- ☐ Abnormal vehicle permit



AnFab Consult Copyright Reserved

647

VEHICLE CRASH DATA COLLECTION



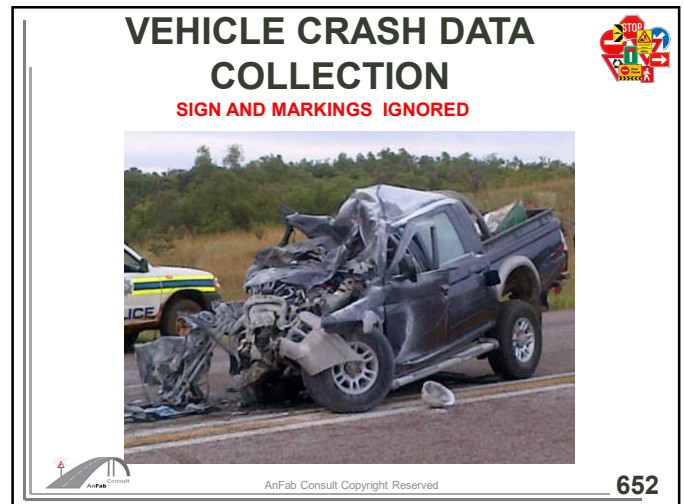
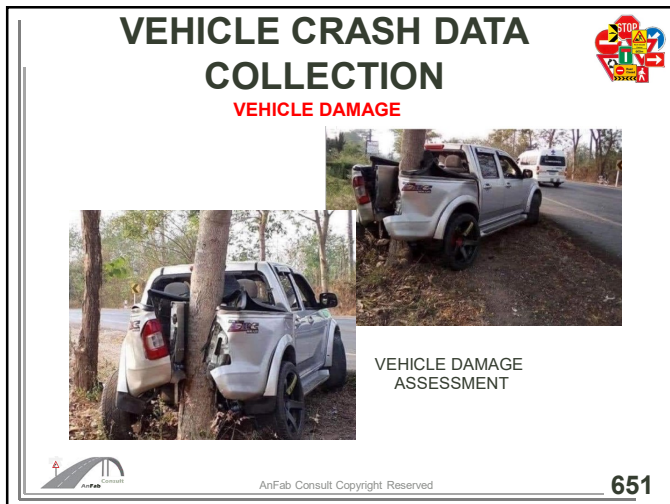
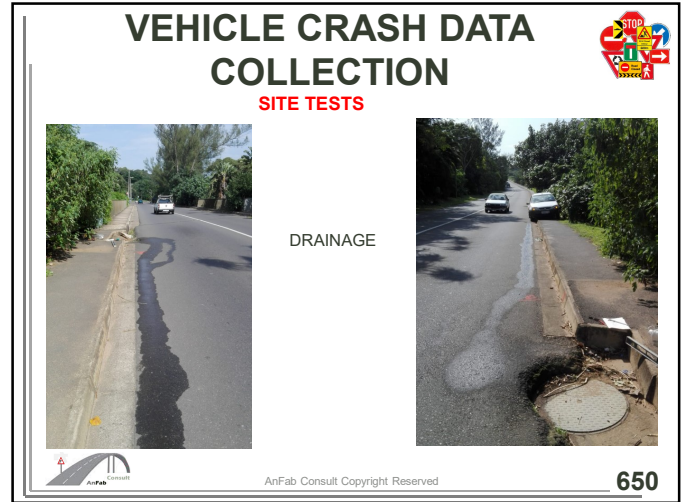
DRIVER INFORMATION

- ☐ Driver licence validation
- ☐ Professional Driver Permit
- ☐ Check for driving under influence of alcohol
- ☐ Damage
- ☐ Long distance time driving
- ☐ Driver error
- ☐ Overloading



AnFab Consult Copyright Reserved

648



VEHICLE CRASH DATA COLLECTION

VEHICLE LOCATIONS AND DIRECTIONS



AnFab Consult Copyright Reserved

653

VEHICLE CRASH DATA COLLECTION

ANALYSE CRASH SITE

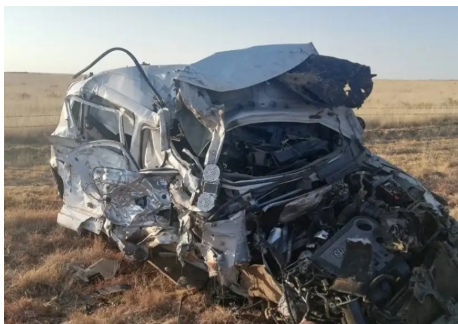


AnFab Consult Copyright Reserved

654

VEHICLE CRASH DATA COLLECTION

CRASH RECONSTRUCTION



AnFab Consult Copyright Reserved

655

VEHICLE CRASH DATA COLLECTION

TYPE OF CRASH



AnFab Consult Copyright Reserved

656

VEHICLE CRASH DATA COLLECTION

VIDEO FOOTAGE

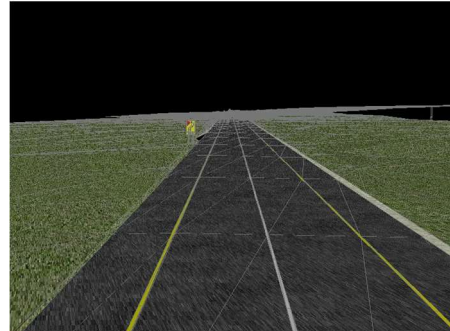


AnFab Consult Copyright Reserved

657

VEHICLE CRASH DATA COLLECTION

CRASH RECONSTRUCTION



AnFab Consult Copyright Reserved

658

VEHICLE CRASH DATA COLLECTION

VIDEO FOOTAGE



AnFab Consult Copyright Reserved

659

VEHICLE CRASH DATA COLLECTION

FORENCIS ANALYSIS



AnFab Consult Copyright Reserved

660

VEHICLE CRASH DATA COLLECTION

DRIVER EXPERIENCE



AnFab Consult Copyright Reserved

661

VEHICLE CRASH DATA COLLECTION

VEHICLE OR DRIVER ERROR



AnFab Consult Copyright Reserved

662

VEHICLE CRASH DATA COLLECTION

VEHICLE OR DRIVER ERROR



663

VEHICLE CRASH DATA COLLECTION

SIGNS AND LINES OMITTED



AnFab Consult Copyright Reserved

664

VEHICLE CRASH DATA COLLECTION

VEHICLE OR DRIVER ERROR



AnFab Consult Copyright Reserved

665

VEHICLE CRASH DATA COLLECTION

VEHICLE OR DRIVER ERROR



AnFab Consult Copyright Reserved

666

VEHICLE CRASH DATA COLLECTION

NATURAL CAUSES



AnFab Consult Copyright Reserved

667

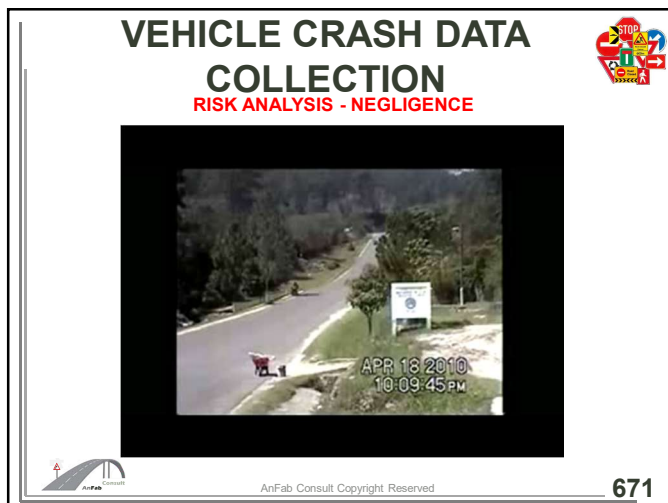
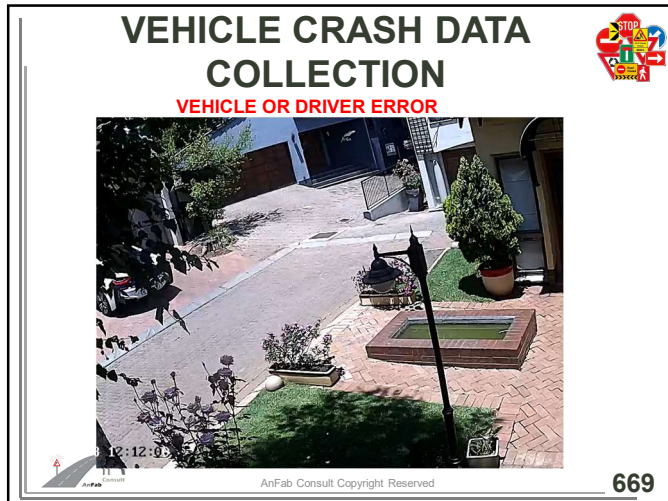
VEHICLE CRASH DATA COLLECTION

VEHICLE OR DRIVER ERROR



AnFab Consult Copyright Reserved

668



VEHICLE CRASH DATA COLLECTION

SITE VIDEO EVIDENCE



AnFab Consult Copyright Reserved

673



CRASH EVIDENCE DRIVER ERROR

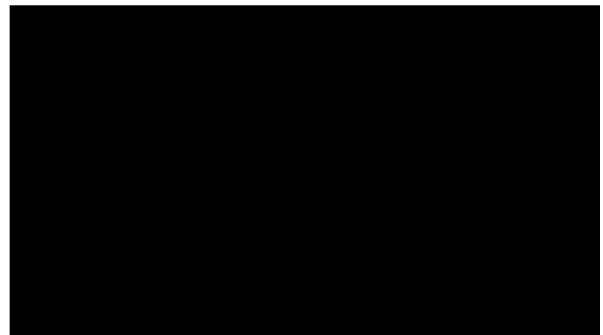


AnFab Consult Copyright Reserved

675

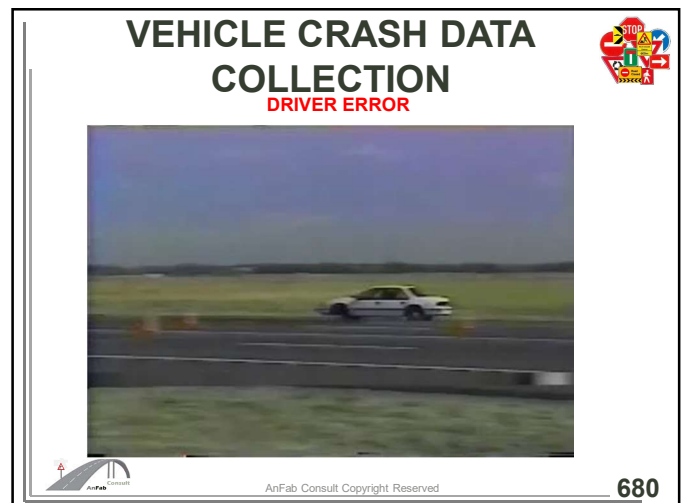
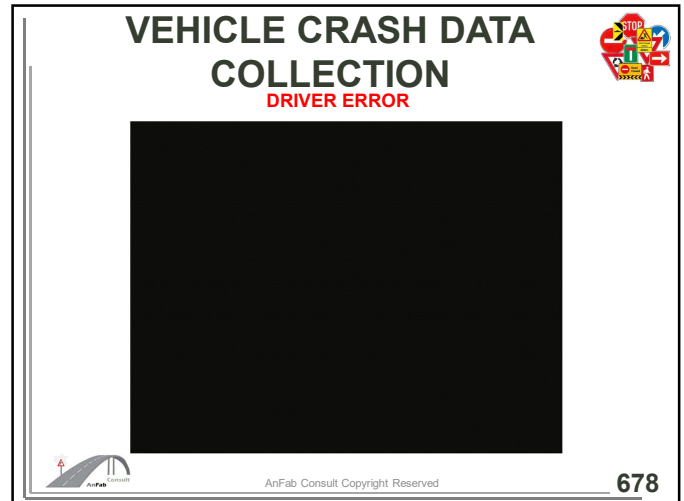
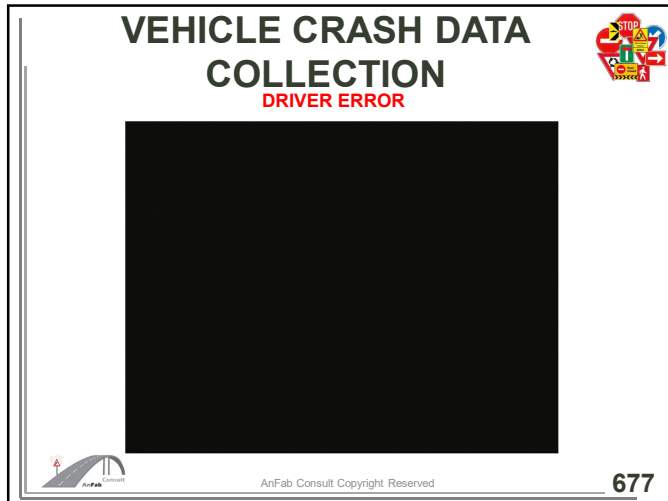
VEHICLE CRASH DATA COLLECTION

DRIVER ERROR



AnFab Consult Copyright Reserved

676



Complete assignment – Module 12



Please note the **slide number** with the question and forward to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

681

CONCLUSION

Course Evaluation

Complete **assignment**
(freehand) and forward within 7
days to
anfabconsult@gmail.com



AnFab Consult Copyright Reserved

682



anfabconsult@gmail.com



AnFab Consult Copyright Reserved

683