Session 3.8 Signs and markings

Conducting Road Safety Audits & Appraisals

Presented by: RTS & AGTT

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Signs and markings

Source: WHO

Signs

Markings

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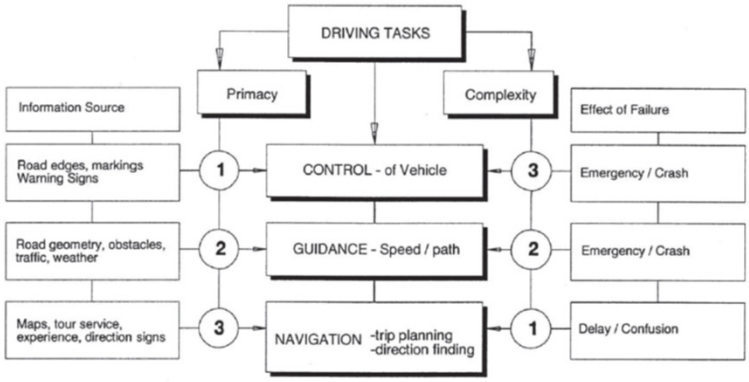
Driving tasks SARTSM



Detail 1.20.3 Human Factors and the Driving Task

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Requirements for Traffic Control Devices: SADC RTSM

1 The functions of traffic control devices include:

(a) the **regulation** of traffic by assigning right-of-way and indicating regulations in force;

(b) 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;

(c) 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;

(d) the provision of additional **information** to road users.

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Requirements for Traffic Control Devices: SADC RTSM

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

(a) Fulfil a need;
(b) command attention;
(c) convey a clear, simple meaning at a glance;
(d) command the respect of road users;
(e) allow adequate time for the correct response from road users.

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Requirements for Traffic Control Devices: SADC RTSM

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

(a) inadequate engineering study prior to installation;
(b) 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;
(c) lack of maintenance or misuse which encourages disrespect;
(d) inadequate geometric design - traffic control devices cannot be expected to correct or alleviate deficiencies in geometric layout.

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Requirements for Traffic Control Devices: SADC RTSM

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

(a) design (see Section 1.4 and Chapters 2 to 7);
(b) placement (see Section 1.6);
(c) application (see all Chapters and Volume 2);
(d) maintenance (see Sections 1.10 and 1.11);
(e) uniformity.

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Requirements for Traffic Control Devices: SADC RTSM

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

(a) **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;
(b) **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;
(c) **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;
(d) **consistency** of signing practice so that like situations are signed in a like manner;
(e) **continuity** of message display until the information is no longer relevant.

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Requirements for Traffic Control Devices: SADC RTSM

6 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.

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Principles for Traffic Control Devices: SADC RTSM

(a) give a positive message in preference to a negative message whenever such a choice is available;

(b) use symbols or diagrams in preference to words;

(c) signs should preferably have the same appearance by day and by night (use of retroreflective material);

(d) limit the amount of information given at any one time to what can reasonably be observed and processed by road users; however,

(e) 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;

(f) the overall approach to signing should embody the principles of positive guidance;

(g) all candidate destination names cannot be displayed at any given point;

(h) pre-trip planning is essential;

(i) regional, area or district names are not a precise enough source of information.

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Terms

(a) **"SHALL"**-a mandatory condition-when this word is used it means that the condition or conditions

referred to must be complied with;

(b) **"SHOULD"**- an advisory condition-when this word is used it is advisable or recommended to comply with the condition or conditions referred to (see also **"RECOMMENDED"**);

(c) **"MAY"**- a permissive condition - the conditions referred to are optional.

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(c) signface design function

(i) clear and simple message transfer to enable road users to :

- see sign (conspicuity)
- recognise sign function (class identification)
- read the sign (legibility)
- interpret the message (comprehension)
- make a decision
- act on the decision timeously;

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(c) signface design function

(ii) important message transfer factors:

- amount of information
- length of words
- similarity of words
- letter/background contrast
- upper/lower case letters
- letter size and style
- legibility distance/reading time
- angle of display;

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(d) information display

(i) use standard symbols rather than words;

(ii) display a standard quantity of information in a standard way;

(iii) limit total amount of information.

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Shape size colour

The shape, size and colour of a road traffic sign contribute to its conspicuity and to the transfer of its primary function or class, and its specific signface message.

Regulatory signs: Round

Warnings signs: Triangular

Guidance / Information signs: Rectangular

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Safety implications of sign and marking maintenance

Maintenance of signs

- Missing
- Faded
- Displaced
- Vandalised

Maintenance of road markings

- Faded

Loss of functions: regulation, warning, guidance and information

Driving behaviour affected

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Reflectivity

RETRO-REFLECTIVE SHEETING FOR ROAD TRAFFIC SIGNS IDENTFICATION GUIDE - 2016

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RETRO-REFLECTIVE SHEETING MATERIALS MADE WITH GLASS BEADS

Example of Sheeting								
Example of Watermark	CE RA1 7 YEARS	Kiwalite 7 Years	3M CE Cl 1 7 Years	OR 7 Years 5310	OR 5710 CE 7 Years RA1, A	14 Cl 1	OR 5810 CE 10 Years RA2, B	14
SANS 1519-1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 3	Class 3
EN 12899	RA1	RA 1	RA1	RA1	RA 1	RA1	RA2	RA2
ASTM D4956	Type I	Type I	Type I		Type I	Type I	Type III	Type III
Manufacturer	Avery Dennison	KIWALITE	3M	Oralite	Oralite	Rennicks	Oralite	Rennicks
Product Name	Engineer Grade	Engineer Grade	Engineer Grade	Engineer Grade	Engineer Grade	Engineer Grade	High Intensity	Ultralite
Series Number	T 1500	2600	3200	5310	5710	8100	5810	800

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RETRO-REFLECTIVE SHEETING MATERIALS MADE WITH MICRO-PRISMS

Example of Sheeting						
Watermark	CE RA1 7 YEARS	3M CE Cl 1 7 Years	3M EG 7930 ASTM 11 EN CL RA1 CE	OR 6710 7 Years	CE T-6500 HIP RA2 10 Years	3M CE Cl 2 10 Years
SANS 1519 Class	1	1	1	1	3	3
EN 12899/CUAP	RA1	RA1	RA 1	RA1	RA2	RA2
ASTM D4956	T I	T I	T I	T I,II	T III,IV	T III,IV
Manufacturer	Avery Dennison	3M	3M	Oralite	Avery Dennison	3M
Brand Name	Prismatic Engineer Grade	Engineer Grade Prismatic	Advanced Engineer Grade Prismatic	Oralite® EGP	High Intensity Prismatic	High Intensity Prismatic
Series Number	T 2500	3430	7930	6710	T 6500	3930

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RETRO-REFLECTIVE SHEETING MATERIALS MADE WITH MICRO-PRISMS

Example of Sheeting						
Watermark	OR 5910 10 YearsR2, C		CE ETA 12/0447 1C24YP001	3M CE DG3 10Years+	OR 6910 10 Years R3B, C	10 YEARS CL 4a
SABS Class	3	3	4a & 4b	4a & 4b	4a	4a
EN 12899/CUAP	RA2	R2	RA3	RA3	RA3	R3B
ASTM D4956	T III,IV	T III,IV	T XI	T XI		T IX
Manufacturer	ORAFOL	Rennicks	Avery Dennison	3M	ORAFOL	Rennicks
Brand Name	Oralite® HIP	HIM	Omnicube	Diamond Grade DG3	Oralite® Brilliant Grade	Crystal Grade
Series Number	5910	600	T 11500	4000	6910	92800

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Reflectivity of signs

TABLE 1.1 RETROREFLECTIVE MATERIALS FOR ROAD SIGNS

Permanent Road Signs - Recommended Class of Retroreflective Material

Type	Series	Background	Border	Text	Symbols/ Arrows	
REGULATORY						
Control	R1 - R6	1	1	1	1	
Command	R101 – R140	1	1	•	•	
Prohibition	R201 – R242	1	1	1	1	
Reservation	R301 – R354	*/1	1	1	1	
Comprehensive	R401 – R403	1	1	1	1	
WARNING						
Advance	W101 – W363	1	1	•	•	
Hazard	W401 – W415	1	1	-	1	
GUIDANCE						
Location	GL	1	•	•	•	River 1
Route Marker/Trailblazer	GE	1	1	1	1	
Direction	GD	*/1	1	1	1	
Freeway Direction	GA GB GC	1	1	1/3	1/3	
Tourism	GF	*/1	1	1	1	
Local Direction	GDL	1	1	•	•	
Diagrammatic	GS	1	1	•	•	"Block" 1
Pedestrian	GP	*/1	•	•	•	
INFORMATION	IN	1	1	1	1	

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Safety implications traffic signal design

Layout of intersection

Layout of signals: poles and aspects

Phasing

Stage lengths

Intergreen

- yellow
- all red

Movements

Conflicts separated in space or time

Pedestrians

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END OF LECTURE

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