

Operational Instruction

2.26

# Warning Signs for Road and Environment Conditions



Government of South Australia

Department of Planning,  
Transport and Infrastructure

**TRAFFIC MANAGEMENT**  
**Operational Instructions****Warning Signs for Road & Environment Conditions - 2.26****AMENDMENT RECORD**

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## 1. Scope

This Technical Note is to be used in conjunction with *AS1742.2-2009* to describe general road and environmental conditions, which warrant the use of road surface and environmental condition warning signs. It aims to ensure that warning signs are installed on a consistent statewide basis.

The use of warning signs at road works is not discussed in this document but is described in *AS1742.3-2009: Traffic Control for Works on Road*.

Additional information for the signs listed below are described within this document.

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- W5-12 Steep Descent
- W5-19 Gravel Road
- W5-SA73 Gravel Roads
- W5-20 Slippery Surface
- W5-43 Uneven Surface
- W8-7 When Wet supplementary plate
- W8-21 Boggy When Wet supplementary plate
- R6-23 Trucks & Buses Must Use Low Gear
- R9-6-1 Next \_\_m supplementary plate
- R9-6-2 Next \_\_km supplementary plate
- W5-SA101 Cross Wind
- W5-SA109 Creek
- W5-SA110 Creeks
- W8-17-1 Next \_\_km supplementary plate

## 2. Road Condition Warning Signs

Road condition signs other than gravel roads and steep descents should not be considered as a final or long-term solution to a problem. Rather, corrective action should be programmed and the sign may be used as a warning to drivers until such time as remedial action is completed. To maintain credibility the signs shall be removed once the deficiency has been corrected.

### 2.1 Uneven Surface Sign



W5-43

The **UNEVEN SURFACE** warning sign (W5-43) should be used on sealed roads only to give warning to road users of an undulating stretch of road that is sufficiently uneven to cause considerable discomfort to vehicle occupants or to cause a shifting of the cargo while travelling at the posted speed limit.

The sign shall not be used in conjunction with an advisory speed plate without the approval of the Manager of Technical Services, however the sign may be supplemented with a **Next** \_\_\_\_ **km** plate (W8-17-1). The use of the W8-17-1 sign is described in **Section 5**.

The signs are of most use to road users where uneven road surfaces are unexpected. For example, where long distances of good road surface are

suddenly interrupted by a section of older or poorer quality surface of an uneven nature. It is unlikely that such signs would be of any value on urban roads with a speed limit of 70 km/h or less.

When the pavement is replaced or rehabilitated to correct the undulation or other defects, the sign shall be removed.

## 2.2 Slippery Surface Sign



W5-20

The **SLIPPERY** surface warning sign (W5-20) is probably one of the most misused warning signs in this series. It should only be used to warn of where the road pavement surface may be slippery due to the low skid resistance, or where a significant water flow runs across the road or water pools on the road after rain and the risk is likely to contribute to the incidence of a crash.

Thus, a **SLIPPERY** surface sign shall only be used where:

1. the low skid resistance is at level P1 or P2 (refer to OI 20.23 Management of Low Skid Resistance),
2. the low skid resistance is at level P1 or P2 and significant water flow runs across the road and/or water pools on the road after rain.

The location must also have clearly identified risk(s) and the risk(s) is likely to contribute to the incidence of a crash.

At sites where water ponds on the road due to a lack of crossfall of the carriageway and drivers may lose control of their vehicles due to their vehicle aquaplaning across the road but the *skid resistance is satisfactory*, a **SLIPPERY** surface sign may be used with a **WHEN WET** (W8-7) supplementary plate.



W8-7

If the road becomes slippery due to runoff from an adjoining private property or from an intersecting side road the sign may be used temporarily until the problem has been corrected.

Other supplementary plates that may be used with the **SLIPPERY** surface sign are contained in Clause 4.11.2.10 of AS1742.2-2009.

On long sections of very slippery pavement consideration should be given to temporarily reducing the speed limit until the condition is rectified. Any change to speed limits must be discussed with the Traffic Investigations Unit, Metropolitan Region.

*Remember: excessive, indiscriminate or inconsistent use of any warning sign including **SLIPPERY** surface signs diminishes their effectiveness and credibility as a useful road safety device.*

To ensure consistent use of these signs a site risk assessment to determine and prioritise safety hazard and pavement condition should occur.

A multi-disciplinary approach to assessing site risk using road safety engineering and road surface condition is recommended. Assessments may include but are not limited to:

- Site safety inspection and assessment – including extent of the road to be signed
- Visual pavement condition inspection – primarily texture, skid resistance, rutting, undulations, crossfall, ponding
- Pavement condition compared to existing maintenance standards and intervention levels (especially for surface texture, skid resistance, cross fall, polished aggregate, rutting)
- Crash history
- 85th%ile speeds

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Pavement condition assessment and prioritisation should be consistent with existing DPTI routine and periodic maintenance standards and intervention levels.

Rutting of the road and undulating road conditions should also be assessed as water can pool on the road in wet weather creating slippery conditions for vehicles.

Roads subject to high speeds, especially those roads where 85th%ile speeds are higher than the speed limit, should also be considered in assessing the risk.

When single vehicle run-off-road type crashes frequently occur on a curve in the road, the assessment should attempt to determine whether they were caused by other engineering deficiencies or by driver error or other non-road surface related issues. For example, a curve that has a high frequency of crashes may have a smaller radius than preceding curves and drivers may be caught unaware due to the change in road geometry. Although the road geometry may partially contribute to some of the crashes, such as curves with an inconsistent radius or lack of superelevation, this does not warrant the use of a **SLIPPERY** surface sign. The signs should generally not be used just to treat sub-standard curves.

Where crashes frequently occur on a curve, delineation devices such as guide posts, pavement markings, curve warning and speed advisory signs may need to be installed or improved in accordance with *AS1742.2-2009* and other relevant Operational Instructions. Where these devices have been proven to be insufficient to correct the problem consideration should be given to installing chevron alignment markers in accordance with *AS1742.2-2009* and *Operational Instruction 2.1 – Chevron Alignment Markers*.

After a fuel spill or similar spill, the temporary **SLIPPERY** sign (T3-3) should be installed until the spill has been cleaned.



T3-3

Signs shall remain in place until the condition of the pavement, under all likely weather conditions, meets acceptable levels.

### 2.3 Gravel Road Signs



W5-19

The **GRAVEL ROAD** sign (W5-19) is to be used in accordance with Clause 4.11.2.3 of AS1742.2-2009 to give advance warning of a road surface change from a sealed road to a singular unsealed road.

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The **BOGGY WHEN WET** supplementary plate (W8-21) should only be used in conjunction with the (W5-19) gravel road sign where the boggy nature of the road surface would be unexpected i.e. it is normal to expect most unsealed roads to be boggy to some extent in wet conditions.



W8-21



W5-SA73

The W5-SA73 sign is used only to give advanced warning of a change in road surface from a sealed road to a network of unsealed roads.

2.4 Steep Descent Sign



W5-12

The **STEEP DESCENT** sign W5-39 (indicating the gradient as a percentage) is no longer used and has been replaced with W5-12 and shall be used as stipulated in AS1742.2-2009 Clause 4.9.2.

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For steep descents and long steep descents the R6-23 End Truck & Bus Low Gear Area is not recommended for use in South Australian. Rather, it is preferred that the R9-6-1 **Next \_\_m** and the R9-7-1 **Next \_\_km** should be used to define the extent of the area that the regulatory R6-22 Trucks & Buses Must Use Low Gear applies.



R6-22



R9-6-1



R9-SA-105

If advance notice of the above sign (R6-22) is required then the R7-SA100 can be used.



R7-SA100

For steep descents greater than 3km additional advance warning shall be provided i.e. as installed on the South East Freeway. Steep descents longer than 3km are rare and advice from the Manager, Technical Services should be sought prior to installing any such advance warning signs.





### 3. Environmental Condition Warning Signs

#### 3.1 Cross Wind Sign



W5-SA101

The purpose of this sign is to alert drivers to the possibility of high cross winds where they may be unexpected.

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**CROSS WIND** signs (W5-SA101) are appropriate in isolated areas such as valleys, cuttings and openings where strong intermittent winds or sudden gusts occur which are capable of altering vehicle-handling capabilities. To enable road users to respond appropriately, the sign shall be supplemented with a **WINDSOCK** in the immediate vicinity.

Such devices provide drivers with an accurate guide to the strength and direction of the wind. Windsocks should be periodically checked and replaced when they become damaged, torn or tangled.

Signs should not be installed on relatively open roads where crosswinds occur over a long distance or where high crosswinds should be expected.

#### 3.2 Sunglare Ahead Sign

The **SUNGLARE** warning signs serve little or no useful purpose to drivers and are no longer installed on DPTI roads. Road users experience sun glare in a wide range of locations while travelling the road network.



Sunglare is likely to occur for only short time periods during the day on most roads, and even then is likely to be a problem only during short seasonal periods each year.

Such signs appear not to have provided any benefit where they have been used in the past. They are unlikely to alter driver behaviour and have lacked credibility.

Therefore, **SUNGLARE** signs of all types should not be installed on DPTI roads and all existing signs are to be removed from the network by DPTI.

#### 3.3 Water Hazard Sign

Water hazard signs are used to warn drivers of Water Hazards and hazardous road environments at water crossings in urban and rural areas. For remote areas reference should be made to *Operational Instruction 2.37 – Traffic Control Signs, Remote Area Unsealed Roads*. For other water hazard warning signs, refer to AS1742.2.

### 3.3.1 Creek & Creeks



W5-SA109



W5-SA110

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**CREEK** sign (W5-SA109) and **CREEKS** sign (W5-SA110) shall be used in advance of locations to indicate that the road is trafficable with care through a creek or creeks. Such situations should only occur on unsealed roads across natural creek beds (i.e. those not constructed as part of a road).

Where a number of creeks occur across a road in close proximity it may be appropriate to use the **CREEKS** sign (W5-SA110) supplemented with a **Next \_\_\_ km** sign (W8-17-1). The use of the W8-17-1 sign is described in **Section 5**.

## 4. NEXT \_\_\_ km Supplementary Plate



W8-17-1

The **NEXT \_\_\_ km** supplementary plate (W8-17-1) should be used in conjunction with road and environmental conditions greater than or equal to 1 km. Only whole numbers of kilometres shall be shown.

The **CREEKS** (W5-SA110) warning sign and the **NEXT \_\_\_ km** (W8-17-1) supplementary plate should be repeated at spacings not exceeding 2km.

This also applies to **SLIPPERY** surface warning signs but the interval is to be no greater than 3km.