NRA
An tÚdarás um Bóithre Náisiúnta
National Roads Authority

Dashboard Manual

Temporary Traffic Management Guidance Handbook

Road Marking Related Works

March 2014

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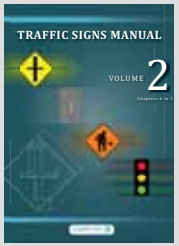
GLOSSARY OF TERMS

CSCS	**C**onstruction **S**kills **C**ertification **S**cheme
DTTAS	**D**epartment **o**f **T**ransport, **T**ourism, and **S**port
GCMTRW	**G**uidance for the **C**ontrol and **M**anagement of **T**raffic at **R**oad **W**orks
GSJ	**G**rade-**S**eparated **J**unction
HSA	**H**ealth and **S**afety **A**uthority
IPV	**I**mpact **P**rotection **V**ehicle
km/h	**K**ilometres **P**er **H**our
LMCC	**L**orry **M**ounted **C**rash **C**ushion
NRA	**N**ational **R**oads **A**uthority
PSCS	**P**roject **S**upervisor **C**onstruction **S**tage
PSDP	**P**roject **S**upervisor **D**esign **P**rocess
Roadworks	Meaning repairs, maintenance, alterations, improvements, installations, or any works to, above or under a public road
SSWP	**S**afe **S**ystems of **W**ork **P**lan
TM	**T**raffic **M**anagement
TTM	**T**emporary **T**raffic **M**anagement
TTMGH	**T**emporary **T**raffic **M**anagement **G**uidance **H**andbook
TSM	**T**raffic **S**igns **M**anual
veh/h	**V**ehicles **P**er **H**our
VMS	**V**ariable **M**essage **S**ign
vpd	**V**ehicles **P**er **D**ay

1 INTRODUCTION

1.1 PURPOSE

This guidance handbook is designed to serve as a quick and easy-to-use reference document for the planning and implementation of temporary traffic management (TTM) measures for routine operations relating to road marking, including stud works. These operations range from continuously moving to multiple short duration stops or one-off isolated stops, but are never more than one day's work.



The Traffic Signs Manual (TSM) and the Guidance for Control and Management of Traffic at Road Works (GCMTRW)

This handbook takes a practical approach to TTM arrangements, giving due consideration to the safety of road users and workers. It intends to complement existing standards and guidance. It also considers the practical issues and risks associated with setting up a TTM layout, which may take significantly longer than carrying out the works themselves, works which are relatively low risk routine operations.

It is intended to be used as a 'dashboard' handbook, and to become a commonplace reference document which will encourage a greater level of consistency in TTM measures for routine operations, such as:

- Installation, replacement and removal of road studs and surface applied studs.
- Machine applied marking, centreline, edge line.
- Screed applied marking, Stop line, Yield symbols and arrows.
- Lane destination marking.
- Worded or diagrammatic marking and hatched areas.

1.2 DEVELOPMENT

This handbook is based on:

- The principles and guidance of Chapter 8 of the Traffic Signs Manual (TSM) and the Guidance for the Control and Management of Traffic at Road Works (GCMTRW).
- Consultation with the HSA, Local Authorities, TM service providers, and the road marking industry.
- NRA experience in implementing and managing road maintenance contracts.

1.3 APPROPRIATE TYPES OF TTM

The appropriate TTM for routine road marking works vary depending on whether they are hand or machine applied, the location and the extent of the works. In addition, some activities involve continuously moving or short stop operations.

Therefore the most appropriate TTM setup for such works may not fall neatly into the standard roadwork types as set out in the TSM Ch. 8 (i.e. Static Types A, B, C, Semi Static, and Mobile).

As such, the layouts included in this handbook, where necessary, combine elements from the various roadwork types in order to arrive at what is considered to be the most suitable TTM arrangement.

1.4 FURTHER ASSESSMENT

While the guidance contained here will provide some consistency in TTM measures used for routine operations, no 'one' set of TTM layouts can cover all sites and conditions. Therefore, at each site, a risk assessment is required, and further development of layouts may be necessary prior to TTM setup. Where further development is required, reference shall always be made to Chapter 8 of the TSM. For the purposes of this handbook:

- **Shall** or **must** indicates that a particular requirement is mandatory,
- **Should** indicates a recommendation and
- **May** indicates an option.

1.5 SITE SPECIFIC RISK ASSESSMENTS

It is important for TTM auditors and installers to note that the layouts in this guidance handbook cover typical scenarios only. There are many instances where they may not suit the particular operation or location. The Contractor's TTM designer may need to develop new layouts or amend the typical layouts shown here, in order to meet their particular site conditions.

It is therefore a requirement that a Site Specific Risk Assessment be carried out by the TTM installer on any layout used in this handbook, prior to implementing it on site.

Section 8 contains a standard Site Specific Risk Assessment pro forma which should be used. Alternatively refer to the GCMTRW document for further guidance on risk assessments.

NO COMPROMISE SHALL BE MADE ON THE SAFETY OF ROAD USERS OR WORKERS

2 GENERAL PRINCIPLES OF HANDBOOK

Complement other TTM guidance


This handbook intends to complement existing standards and guidance, and apply it to specific routine operations.

Use of best practice and experience

While based on the principles of TSM Chapter 8 and the GCMTRW documents, this handbook is informed by years of experience in routine road maintenance operations.

TTM types

In order to achieve the most practical setup, elements of different types of TTM have been blended or combined.

Take account of works duration

Consider if safe and reasonably practicable to spend extended durations setting up TTM for short duration works. Longer exposure to traffic increases risk.

Incident response

TTM setup should be capable of being removed quickly in the event of an incident or emergency.

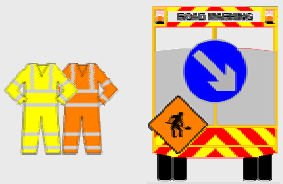
Risk assess for routine operations

Is putting out the TTM more hazardous for operatives and road users than the routine operation itself?

Consistency

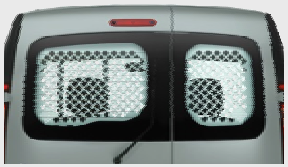
There are different interpretations of the current standards, which gives rise to inconsistencies and potential commercial advantages. The layouts provided here aim to remove ambiguity for routine operations.

Standardising PPE and works vehicles



A benchmark for PPE and vehicle conspicuity will help give a consistent message to road users.

Maximising visibility for operatives



If an operative can see what's coming, he has at least some chance of escape or preparing himself.

Continuously Moving Works

Routine operations which move continuously with very short stops for single carriageways. Use of advance signage and repeaters.

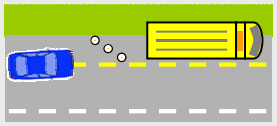
Stop/Go Operative

This vulnerable operative must be protected, while ensuring he has good visibility and is conspicuous.

Using Spotters

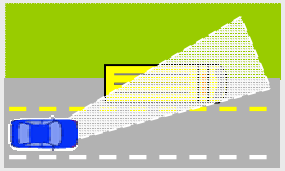
Where operatives are working at high risk locations and are engaged in an activity, dedicated spotters are used as a second set of eyes to protect the operative. All spotters should carry whistles and flags.

Advance lines of cones to alert drivers



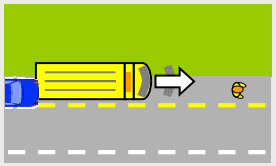
Cones used in advance of works to alert errant drivers before they reach the works area, and to give them time to recover.

Works vehicles as shields



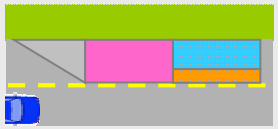
Use works vehicle(s) to protect workers from errant vehicles, allowing for potential shunting etc.

Mitigate against vehicle shunting



A shunting distance should be provided to mitigate against the risk of a shunted works vehicle impacting the works area.

Safety Zones



Longitudinal and lateral safety zones and tapers implemented to protect the works area.

Carry TM equipment to maximise visibility

Always carry signs and cones on side away from traffic, to maximise operative and traffic visibility.

Impact Protection Vehicle (IPV)

IPV's are used to set up the TTM, therefore where possible should also be used during the works to protect operatives.

3 THE CONCEPT OF ROUTINE OPERATIONS

3.1 GENERAL CONCEPT

Routine operations are considered to be those of short duration (less than one working day). Where works are greater than one working day, the standard static layouts of TSM Chapter 8 apply.

3.2 ANTICIPATED DURATIONS

Increased use of Static Signage

Mobile Mobile works site, involving lane closures. Works are mobile and/or make frequent short duration stops. Primarily complement the layouts for mobile works for dual carriageways and motorways as per the TSM Chapter 8.

Continuously Moving Where the works site can be up to 10km in length and the works involve a continuously moving operations and/or short duration stops. Operations are predominantly in the running lane and covers vehicle applied activities such as longitudinal road markings, stud fitting/removal and/or short duration screed works.

Static Fixed work site involving more comprehensive stops, essentially but not restricted to 30 minute duration. Typically covering operations involving screed applied markings at isolated locations, and/or junctions and roundabouts. Primarily complement the layouts for static operations as per the TSM Chapter 8.

Increased use of Mobile Protection Measures

Note: Continuously moving operations are defined as those where the works travel along the live carriageway at a slower speed to the main traffic. These operations involve different types of TTM to control and safely guide the main traffic past the works. The TTM can include, but is not limited to, the use of warning and works vehicles, STOP/GO on foot or by quad, marshalling by quad, dedicated spotters or, where appropriate, the use of Impact Protection Vehicles (IPV).

3.3 PARTICULAR REQUIREMENTS FOR ROUTINE OPERATIONS

- Careful consideration must always be given to site specific conditions and further risk assessment must be carried out if deviations from the outlined durations are required (refer also to Section 1.5).
- The emphasis must always be on the safety of the work force, and road users being able to safely pass the works.
- Existing pedestrian and/or cyclist facilities shall be maintained where reasonably possible, otherwise they shall be safely guided through the site, or a safe temporary route past the works shall be provided.
- Particular precautions must be taken during adverse weather conditions. The Contractor must consider what further measures are appropriate, up to and including pulling off site. Weather conditions such as, but not limited to, low-lying sun, fog, frost/ice/snow, heavy rainfall, wet/slippery roads.
- Where TTM is set up to encompass multiple works areas within close proximity, these areas may be considered as separate sites for the purposes of duration, only if further risk assessment has determined that the cumulative duration is not excessive. Additional TTM measures are required if this cannot be clearly demonstrated, or if other additional risks result.
- It should be noted that the TTM layouts in this handbook are considered to be appropriate for daylight hours only. Further assessment is required for the use of TTM for works outside of this period.

4 EQUIPMENT

4.1 VARIABLE MESSAGE SIGNS

Principles of Use

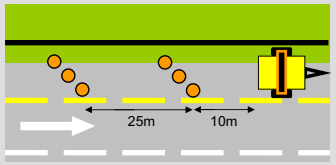
Variable Message Signs (VMS) are considered a requirement in the following circumstances:

- Single Carriageways –
  - Recommended for use as part of continuously moving operations up to a max distance of 10km, to be used in advance of the works in both directions.
  - Generally not required otherwise unless the works zone is of an extended length (>2km), or operatives working on the live carriageway.
  - Generally not required for one-off isolated works* of short duration i.e. < 30 mins.
  - Can be used in other particular situations if risk assessment deems them necessary.
- Dual Carriageways & Motorways –
  - As part of continuously moving operations, up to a max distance of 10km in advance of the works.
  - Where works involve operatives working on the live carriageway.
  - Where the works zone is of an extended length (>2km).
  - Generally not required for one-off isolated works* of short duration i.e. < 30 mins.

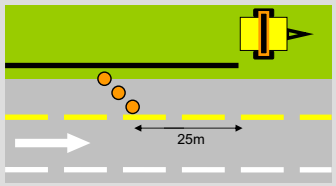
One-Off Isolated Works *refer to scenarios that are isolated to one works area (one site), no closer than 10km from the next site. They are restricted to <30 mins operations, and are* ***not*** *considered to be linear or extensive in nature.*

VMS Protection & Positioning

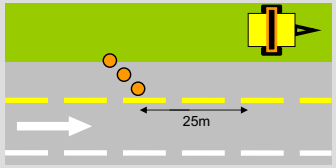
VMS should be regarded as a fixed object (hazard) in accordance with NRA DMRB TD 19. They should be located behind existing safety barriers where possible. The following diagrams give the various scenarios that are considered acceptable for protecting the VMS.



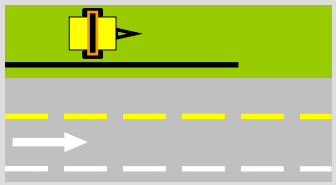
Short Duration Only
(Limited verge access with no barrier protection – cones in hard shoulder)



Short Duration Only
(Verge access with no barrier protection – cones in hard shoulder)



Better Scenario
(Verge access with limited barrier protection – cones in hard shoulder)



Ideal Scenario
(Barrier protection)

The requirements in relation to the positioning of VMS are similar to those for static signs. Lateral clearance, clear visibility, and road geometry are to be considered when positioning VMS, and when in position the VMS should be free of obstructions such as vegetation.

VMS Message Sets

The messages displayed on VMS should be clear and concise. Preferably only one message should be displayed, as alternating messages are often illegible to passing traffic.

For Road Marking operations one of the following typical messages should be used as appropriate:

VMS sizes and specifications are to be in accordance with *EN12966* and the *NRA Guidelines For The Use Of Variable Message Signs On National Roads (www.nra.ie).*

4.2 WORKS / WARNING VEHICLE RECOMMENDATIONS

Front Markings (All vehicles)

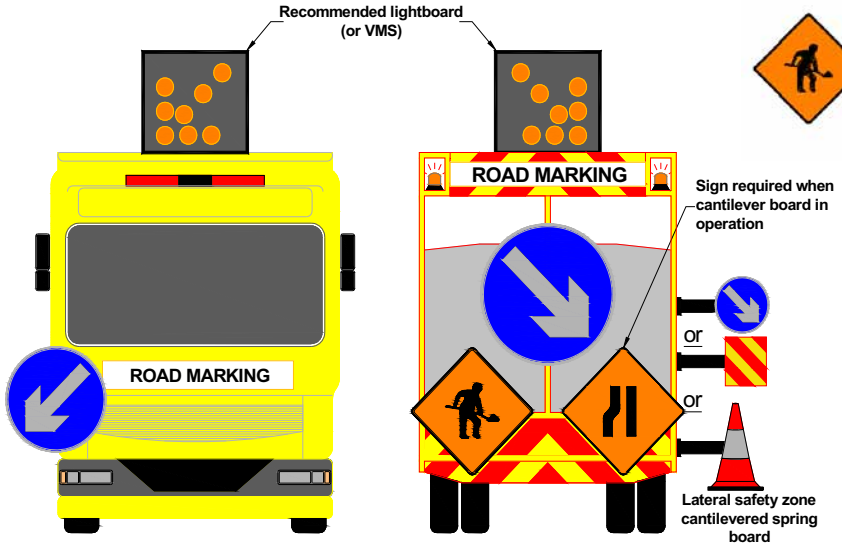
- Main body of vehicle painted in a conspicuous yellow.
- Optional conspicuity markings may be added to the front of the vehicle in an alternative colour to the main body. Ensure reflective markings do not 'dazzle' approaching drivers.
- Front markings must be Class RA1 retro-reflective material only.

Rear Markings (All Vehicles)

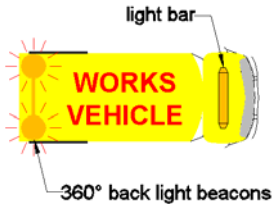
- The rear of the vehicle should be covered in markings as much as possible. Chevron markings to be used, comprising alternate strips of fluorescent orange-red Class RA2 retro-reflective material and fluorescent yellow non-retroreflective material, of not less than 150mm width each, inclined at 45-60° to the horizontal and pointing upwards.
- The rear of the vehicle must be kept as clean as possible to maximise conspicuity and maintain its retro-reflective properties.
- Visibility through the rear of the vehicles should be maintained as much as possible.
- All signs on the rear of vehicles must be removed/covered once operations are complete (or work is finished for the day).
- If trailers or other equipment is towed to the works site, it must not block the vehicle mounted signage during operations. All equipment must be detached prior to operations commencing, or if not, the vehicle signage must be replicated on the back.

If non-standard vehicles (e.g. concrete trucks) are used as part of short term operations, where they may be potentially exposed to oncoming traffic, they must be made highly conspicuous with appropriate markings and signage, as per the requirements for other works and warning vehicles.

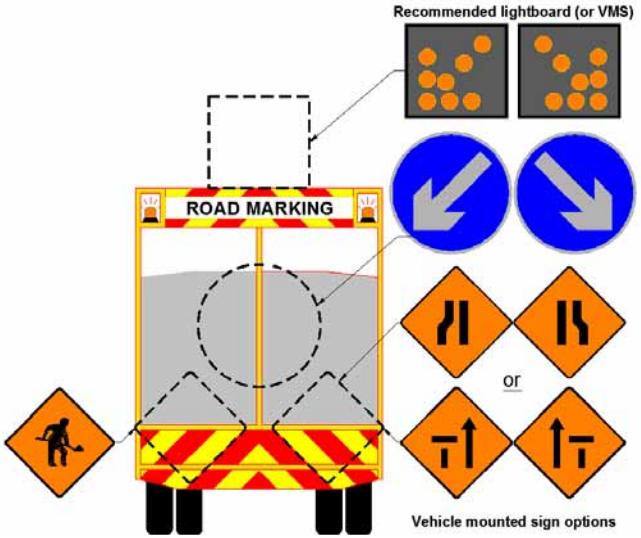
There is to be no working from the rear of any vehicle, unless it is suitably protected from oncoming traffic in that direction.



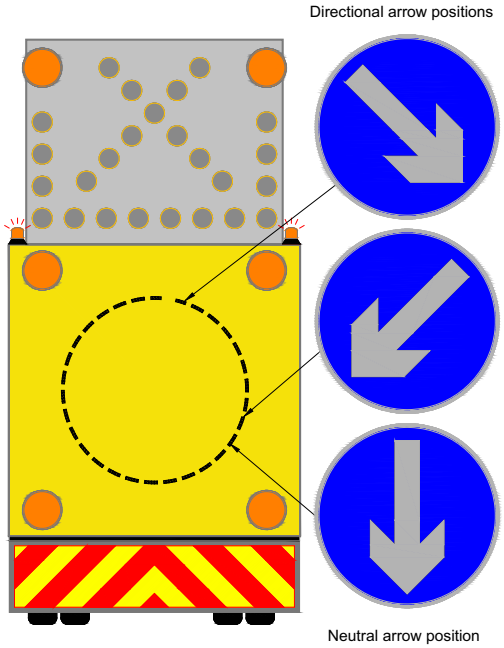
Vehicle Configuration (Front & Rear)



Light Bar and Beacon Configuration



Rear Sign Configuration



IPV (Impact Protection Vehicle)

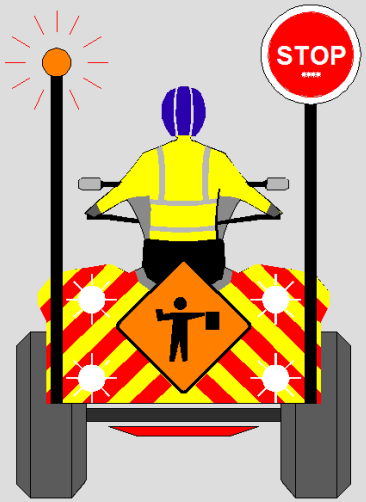
(Rear Sign Configuration)

4.3 OTHER VEHICLES

Any vehicle stopping on the road for works purposes or inspections should be conspicuously marked in the same manner as the work vehicles (described on previous page).

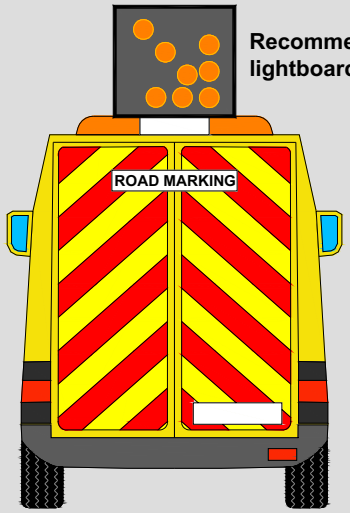
Vehicles must be equipped with either a roof-mounted flashing amber warning light bar or independent roof-mounted flashing amber warning beacons, visible through 360°. For vehicles with bodies, the rear window chevrons should be semi-transparent to allow a clear view out the back of the vehicle where possible.

Where quad vehicles are used as part of traffic control operations, they must be road worthy, and fitted with wing mirrors, LED's and high-level lights. Operatives must wear protective helmets at all times. The Stop/Go batten must be positioned on the right hand side of the vehicle.



Quad Vehicle

Works Pick-Up



Works Van

Requirements for Vehicle Mounted Beacons

- Must comply with the requirements of the Road Vehicle Lighting Regulations and should also comply with the United Nations Economic Commission for Europe (UNECE) Regulation 65 on Special Warning Lamps.
- Where obscured by others parts of the vehicle or any equipment carried on the vehicle, additional beacons should be fitted where they will remain visible.
- They shall be in use when entering, leaving or moving within the site, when travelling in traffic at less than the general traffic speed, when working through junctions and roundabouts, and when stationary on the hard shoulder.
- When stationary within the confines of a fully installed traffic management layout, the roof-mounted beacons shall be switched off, unless they form part of the guarding of the works, e.g. works on minor roads, or are required for mobile works.
- Vehicles should carry spare beacons to ensure the vehicle has at least one lamp working, should a bulb blow.
- Beacons must be kept clean and serviceable at all times, and be inspected as part of the normal vehicle inspection regime.

4.4 COMMUNICATION SYSTEM

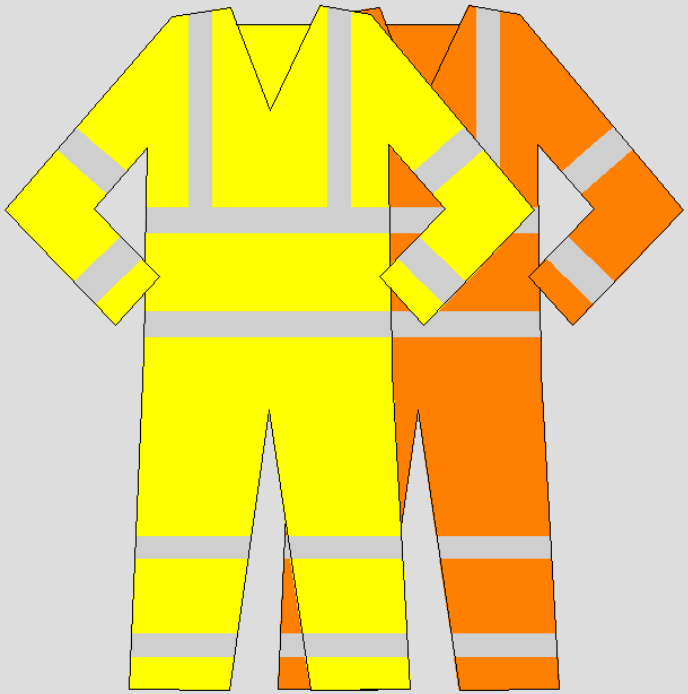
A reliable communication system should be provided between all vehicles. This is considered particularly important where there is no clear line of sight between vehicles and operatives.

It is also recommended that a communication system be provided for operatives on the ground, acting in traffic control and spotter roles (e.g. Stop/Go man) at all times.

All operatives with communication devices should be interconnectable.

4.5 RECOMMENDED PPE

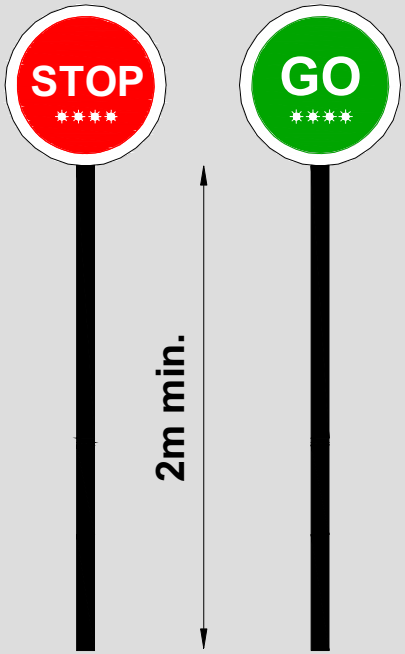
- Long sleeve high-vis vest (or jacket) and trousers to be worn by all operatives at all times.
- Steel toe cap boots to be worn at all times.
- Hard hats, gloves, eye and ear protection, etc. to be worn as required, depending on the operation.



Recommended for all Operatives

4.6 STOP / GO DISCS

- Where Stop/Go discs are used, they must be visible to oncoming traffic at all times (particularly on bends and crests of hills).
- They must be a minimum height of 2m, but may need to be higher in certain circumstances, to maintain visibility.
- Typically they should include LED's on both faces, to improve conspicuity.



5 TEMPORARY TRAFFIC MANAGEMENT CHECKLISTS

Pre Setup – Consultation and Approvals

- ☐ **Develop TTM layouts**
- ☐ **Agree Programme for the Works & Working Hours**
- ☐ **Notify An Garda Síochána** (incl. Traffic Corps)
- ☐ **Notify Emergency Services** (if required)
- ☐ **Obtain Road Opening Licence / Road Closure Order** (if required)
- ☐ **NRA's Road Space Booking System** – request consent through the Motorway Traffic Control Centre (where applicable)
- ☐ **Submit AF2 Forms to the Health and Safety Authority (HSA)**
- ☐ **Client to appoint PSCS** (to be accepted by the Contractor)
- ☐ **Appoint Temporary Traffic Operations Supervisor**
- ☐ **Inform Bus Operators** (where applicable)

Pre Setup – H&S Requirements

- ☐ **PSDP to be notified**
- ☐ **Site Specific Risk Assessment** – to be carried out and recorded for each separate works site location.
- ☐ **Modifications to TTM Layouts** – where required under risk assessment, modifications to layouts must be recorded prior to implementation on site.
- ☐ **Communicate to TTM Installer** – the Temporary Traffic Operations Supervisor (or PSCS) must adequately communicate any particular changes or requirements of the specific TTM layouts to the TTM Installer prior to set-up.
- ☐ **Hazard Identification** – identification of utilities and other hazards must be carried out prior to TTM set-up.

Pre Setup – H&S Documentation

The following documentation is to be held in the works vehicle at all times.

- ☐ **Site Specific TTM Layouts**
- ☐ **PSCS's Construction Stage Safety & Health Plan**
- ☐ **Signing, Lighting & Guarding at Roadworks CSCS card** (for Temporary Traffic Operations Supervisor only)
- ☐ **Safe Pass cards**
- ☐ **Machine Operator CSCS cards**
- ☐ **IPV Driver Qualifications** (where applicable)

During Works – General Requirements

- ☐ **3 minute traffic counts** must be carried out and recorded prior to TTM setup where required. Repeat at intervals to ensure that traffic flows are not exceeded for the selected layout.
- ☐ **Queue lengths** to be checked regularly. If excessive build up is observed, Contractor to consider pulling off site and returning when traffic volumes adequately reduce.
- ☐ **Weather conditions**, such as heavy rain, fog, snow, low lying sun, etc. which can reduce visibility, should be considered when implementing TTM.
- ☐ **Permanent signs** should be covered or taken down if in contradiction with the TTM layout.
- ☐ **Removing TTM** may be required to deal with high traffic volumes, adverse weather conditions, and emergency access.
- ☐ **TTM equipment**, cones, signs, barriers, PPE, etc. should be cleaned and checked regularly for displacement or damage, and replaced where needed.
- ☐ For short duration or moving works, **varying degrees of TTM** will be required at different stages as site conditions change. At all stages, the TTM must be capable of properly managing road users and protecting operatives, particularly when transitioning between different TTM scenarios.
- ☐ All **TTM must be removed once the works are completed**. Any permanent signs covered/removed for the duration of the works must now be reinstated.
- ☐ Care must be taken not to cause **detrimental damage to verges, filter drains, and landscaped areas**, when manoeuvring the works vehicles.
- ☐ **TTM Installers must face oncoming traffic** (and be visible to oncoming traffic) when placing and removing signs and cones.

6 TTM LAYOUT DIAGRAMS – ROAD MARKING

Temporary Traffic Management Layout Diagrams

For

ROAD MARKING

LAYOUT INDEX

Screed Applied Markings	Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
- Lane Destination Markings - Arrows - Worded and Diagrammatic Markings (eg SLOW) - Stop Lines, Yield Lines, - Hatched Areas (eg Yellow Boxes, Ghost Islands)	- Installation and Removal of Road Studs - Installation and Removal of Surface Applied Studs - Replacement of Reflective Stud Inserts - Machine Applied Line Markings - Short Duration Screed Operations

	WORKS AREA/OPERATION			LAYOUT REFERENCE	
				Continuously Moving	Static
SINGLE C/W	Centre Lines & Edge Lines	Stop/Go on Foot	All Conditions, All Volumes	RM01	-
		Stop/Go on Quad	All Conditions, All Volumes	RM02	-
		Stop/Go on Foot and Marshalling	Narrow Road (Remaining Pavement Width <4.5m)	RM03	-
		Stop/Go on Foot and Marshalling	Wide with Hard Shoulder, All Volumes	RM04	-
	Edge Lines (Stud Fitting Type 1)	Stop/Go on Foot	All Conditions, All Volumes	RM05	-
		Stop/Go on Quad	All Conditions, All Volumes	RM06	-
	Centre Lines Only	2-way Traffic Maintained (Working From Running Lane)	Wide with Hard Shoulder, All Volumes	RM07	-
	Edge Lines Only	2-way Traffic Maintained (Working From Hard Shoulder)	With Hard Shoulder, All Volumes	RM08	-
	Climbing Lane	2-way Traffic Maintained (Working From Climbing Lane)	All Volumes	RM09	-
		2-way Traffic Maintained (Working Opposite Climbing Lane)	All Volumes	RM10	-
	Nearby Passing Bay	2-way Traffic Maintained	All Volumes	RM11	-

	WORKS AREA/OPERATION			LAYOUT REFERENCE	
				Continuously Moving	Static
SINGLE C/W	Stop Line on Approach Road (T-Junction)	All Stop	With Hard Shoulder, All Volumes	-	RM12
		All Stop	No Hard Shoulder, All Volumes	-	RM13
	Mainline Carriageway	2-way Traffic Maintained (Working From Hard Shoulder)	With Hard Shoulder, All Volumes	-	RM14
		Stop/Go (Working From Running Lane)	No Hard Shoulder, All Volumes	-	RM15
		Stop/Go (Hatching on Bend)	All Conditions, All Volumes	-	RM16
		Stop/Go and Priority (Working From Running Lane)	All Conditions, Low Volumes, Good Sight Lines Only	-	RM17
	Ghost/Central Island	2-way Traffic Maintained	With Hard Shoulder, All Volumes	-	RM18
		3-way Stop/Go	No Hard Shoulder, All Volumes	-	RM19
	Urban/Signalised Junction	All Stop	All Conditions, Off-Peak Only	-	RM20
	Roundabout Markings	All Stop (All Works Areas)	Roundabout, Off-Peak Only	-	RM21
		Traffic Flow Maintained (Left Entry Lane)	Roundabout, All Volumes	-	RM22
		Traffic Flow Maintained (Right Entry Lane)	Roundabout, All Volumes	-	RM23
		All Stop (All Works Areas)	Mini Roundabout, Off-Peak Only	-	RM24

Screed Applied Markings	Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
- Lane Destination Markings - Arrows - Worded and Diagrammatic Markings (eg SLOW) - Stop Lines, Yield Lines, - Hatched Areas (eg Yellow Boxes, Ghost Islands)	- Installation and Removal of Road Studs - Installation and Removal of Surface Applied Studs - Replacement of Reflective Stud Inserts - Machine Applied Line Markings - Short Duration Screed Operations

	WORKS AREA/OPERATION			LAYOUT REFERENCE	
				Mobile	Static
DUAL C/W & MOTORWAY (All Speeds)	Hard Shoulder Line/Bus Lane Line	Hard Shoulder Closure	With Hard Shoulder, All Speeds, 2- Lane (Off-Peak Only)	RM25	-
		Lane 1 Closure	No Hard Shoulder, All Speeds, 2- Lane (Off-Peak Only)	RM26	-
		Lane 1 Closure	All Speeds, 3- Lane (Off-Peak Only)	RM27	-
	Centre Line/Median Line	Lane 2 Closure	All Speeds, 2- Lane (Off-Peak Only)	RM28	-
	Lane 1/2 - Lane Line	Lane 1 & 2 Closure	All Speeds, 3- Lane (Off-Peak Only)	RM29	-
	Lane 2/3 - Lane Line	Lane 2 & 3 Closure	All Speeds, 3- Lane (Off-Peak Only)	RM30	-
	Median Line	Lane 3 Closure	All Speeds, 3- Lane (Off-Peak Only)	RM31	-
	Bifurcation Arrows	Lane 1 Closure	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM32	-
	Diverge Lane Line	Lane 1 Closure	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM33	-
	Merge Lane Line	Lane 1 Closure	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM34	-
	Off-Ramp Lines	Left Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM35	-
		Right Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM36	-
		Left Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM37	-
		Right Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM38	-

	WORKS AREA/OPERATION			LAYOUT REFERENCE	
				Mobile	Static
DUAL C/W & MOTORWAY (All Speeds)	Compact Slip Lines	Off-Slip Edge/Centre Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM39	-
		On-Slip Edge/Centre Line	All Speeds, 2 & 3- Lane (Off-Peak Only)	RM40	-
	Compact Slip	Stop/Go on Exit	All Speeds, 2 & 3- Lane (Off-Peak Only)	-	RM41
		Stop/Go on Approach	All Speeds, 2 & 3- Lane (Off-Peak Only)	-	RM42
	Mainline Carriageway	Hard Shoulder Closure	All Speeds 2 & 3- Lane	-	RM43
		Diverge Hatching	All Speeds 2 Lane (Off-Peak Only)	-	RM44
		Diverge Hatching	All Speeds 3 Lane (Off-Peak Only)	-	RM45
		Merge Hatching	All Speeds 2 Lane (Off-Peak Only)	-	RM46
		Merge Hatching	All Speeds 3 Lane (Off-Peak Only)	-	RM47
		Compact Island Hatching	All Speeds 2 Lane (Off-Peak Only)	-	RM48
		Compact Island Hatching	All Speeds 3 Lane (Off-Peak Only)	-	RM49
	Off-Ramp	Left Side	All Speeds, 2 & 3- Lane (Off-Peak Only)	-	RM50
		Right Side	All Speeds, 2 & 3- Lane (Off-Peak Only)	-	RM51
		All Stop	All Speeds, 2 & 3- Lane (Off-Peak Only)	-	RM52
	Urban Mainline Carriageway	Lane 1 Closure	All Speeds, 2 Lane Urban (Off-Peak Only)	-	RM53
		Lane 2 Closure	All Speeds, 2 Lane Urban (Off-Peak Only)	-	RM54
		Lane 1 & 2 Closure	With Bus Lane, All Speeds, 2 Lane Urban (Off-Peak Only)	-	RM55

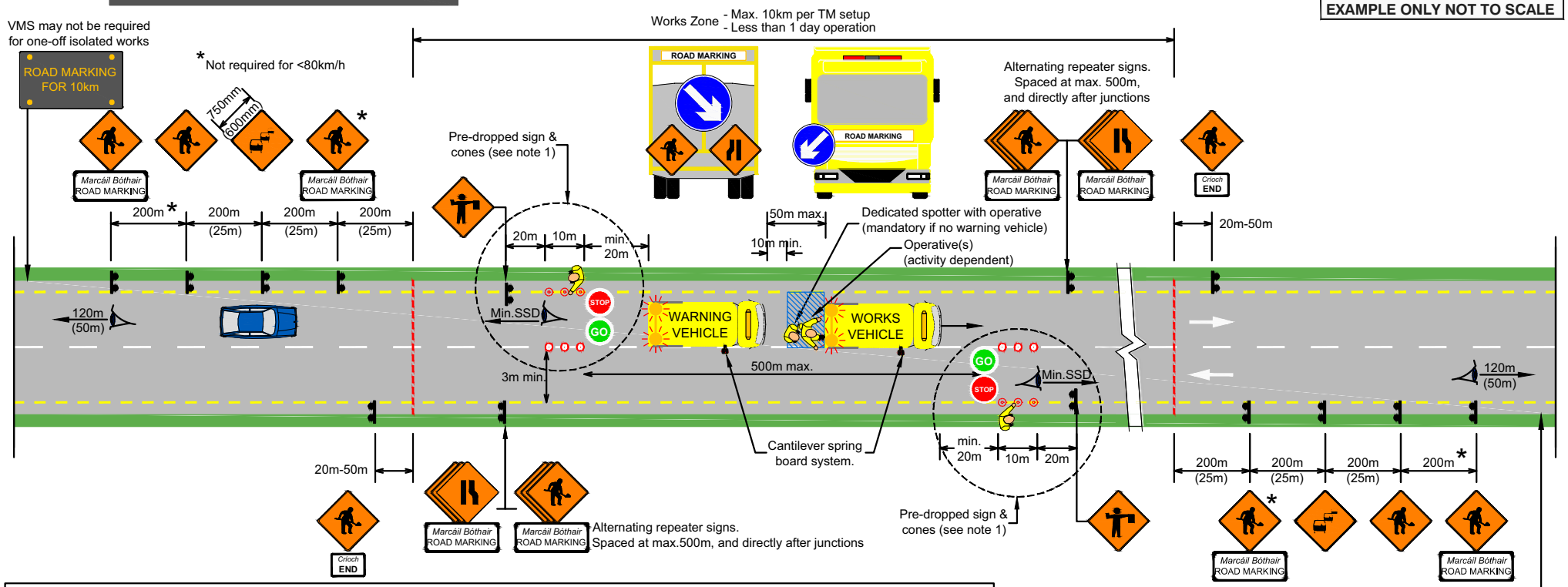
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

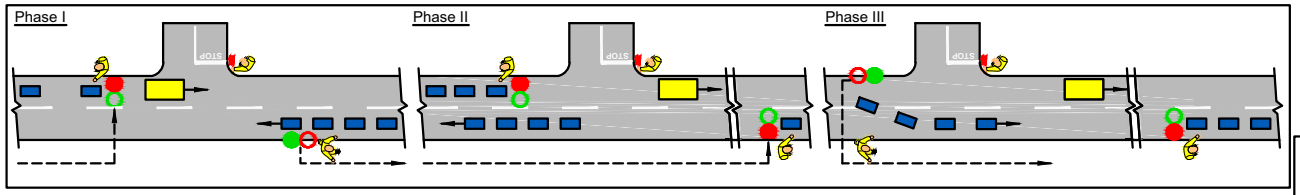
Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

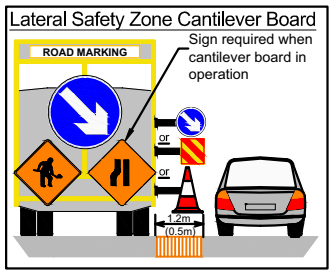
EXAMPLE ONLY NOT TO SCALE





SSD Parameters

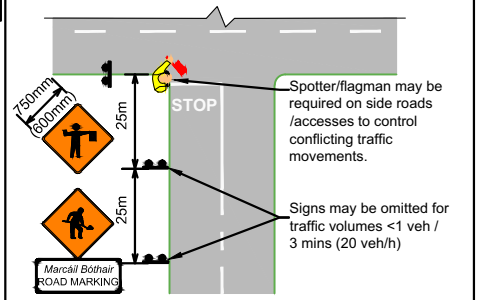
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along the verge.
   (See RM02 for 'quad operation').
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.

Side Road Within Stop/Go Setup



Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter
- Operative
- Visibility: 120m (50m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- Stop/Go & Operative
- Works Area
- Works Zone

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Centre Lines & Edge Lines (Stop/Go on Foot)

Continuously Moving

Single C/W - All Conditions

All Volumes

RM01

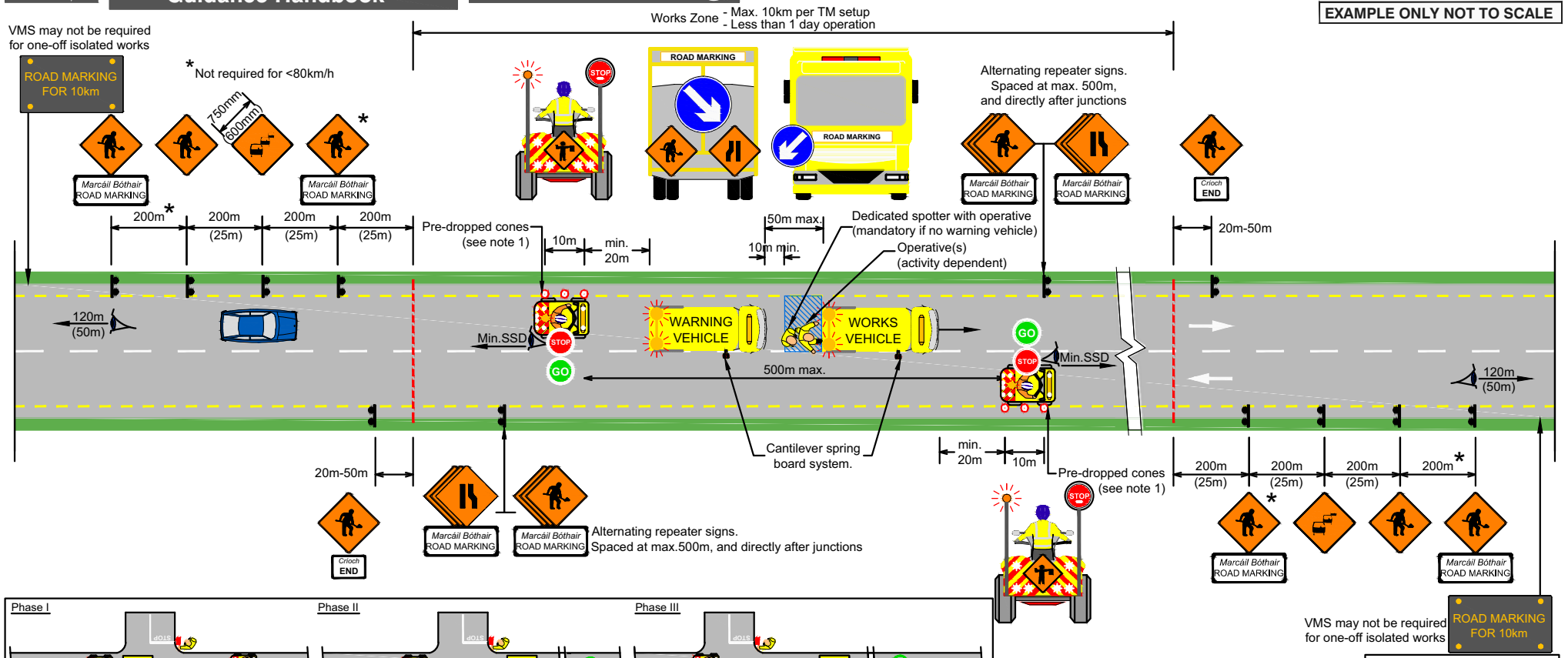
RM01

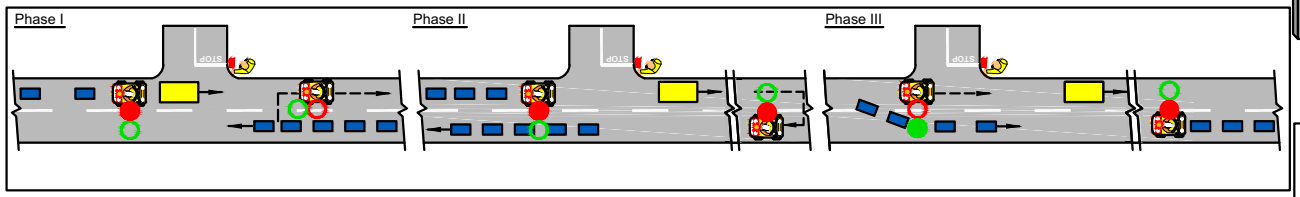
Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

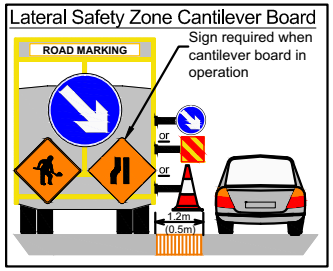
EXAMPLE ONLY NOT TO SCALE





SSD Parameters

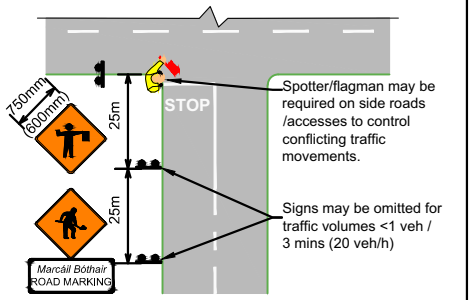
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. Sets of 'cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
5. Operatives may dismount from quad if required.
6. Max. 500m recommended between Stop/Go controls, subject to risk assessment, min. SSD to be achieved at all times.

Side Road Within Stop/Go Setup



Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility: 120m (50m) relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- Stop/Go on Quad
- Works Area
- Works Zone

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Centre Lines & Edge Lines (Stop/Go on Quad)

Continuously Moving

Single C/W - All Conditions
All Volumes

RM02

RM02

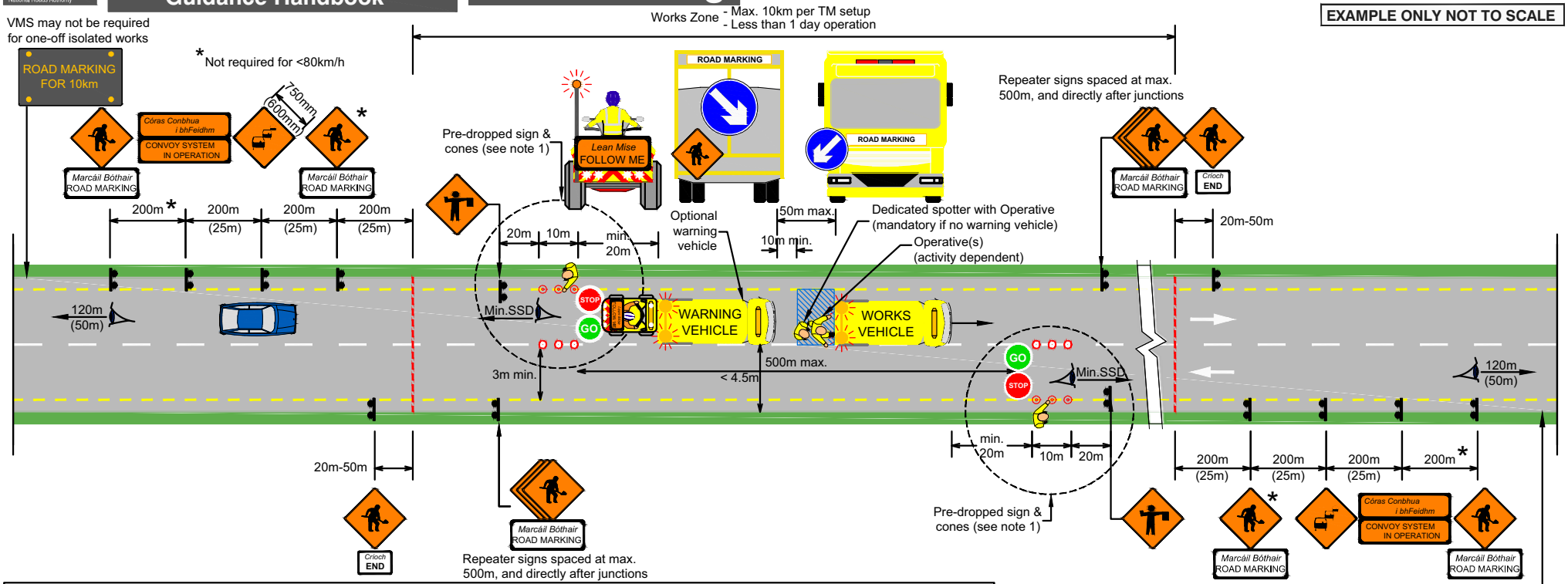
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



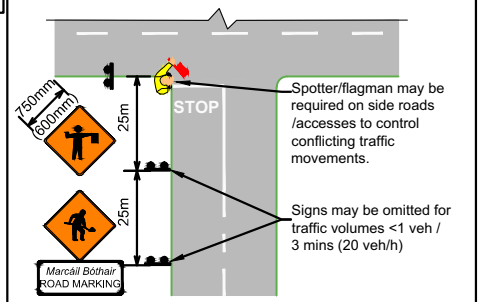
Notes

1. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along the verge.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
5. Marshalling system restricted to Level 4 roads, single carriageway 80/100 km/h and not to be used in poor weather conditions
6. Traffic must be controlled/stopped by the Stop/Go controls prior to the quad marshalling the traffic through the works.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Side Road Within Stop/Go Setup



Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter
- Operative
- Visibility: 120m (50m) — relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) — relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- Traffic Sign
- Stop/Go & Operative
- Marshalling Quad
- Works Area
- Works Zone

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Centre Lines & Edge Lines (Stop/Go on Foot and Marshalling)

Continuously Moving

Single C/W - Narrow Road
(Remaining Pavement Width < 4.5m)

RM03

RM03

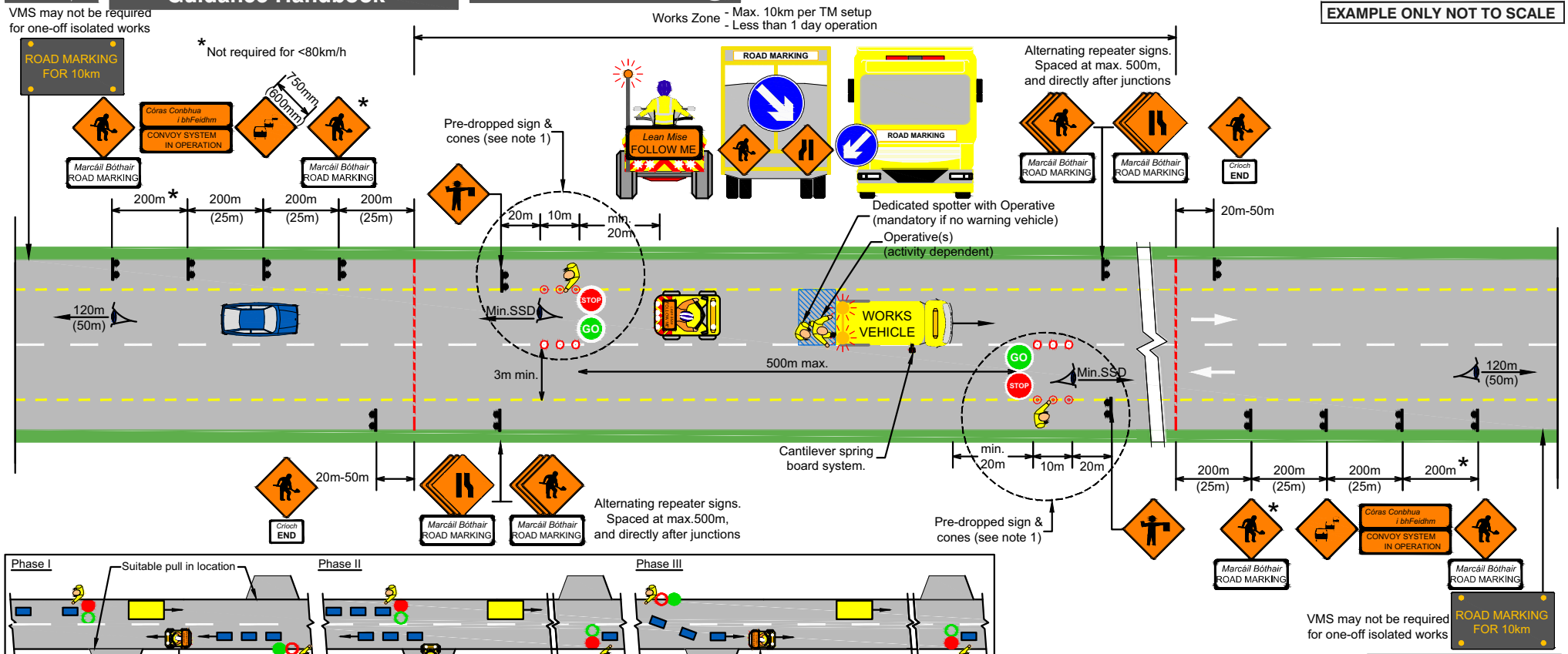
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

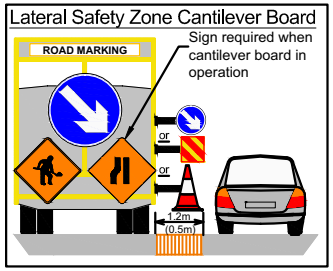


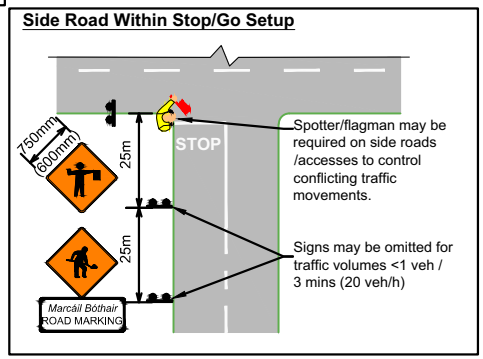
Notes

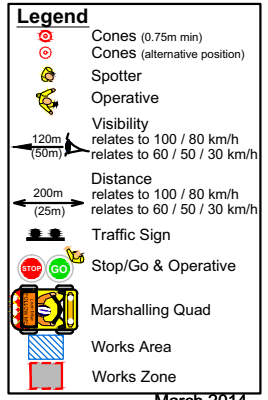
1. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along the verge.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
5. Marshalling system restricted to Level 4 roads, single carriageway 80/100 km/h and not to be used in poor weather conditions.
6. Traffic must be controlled/stopped by the Stop/Go controls prior to the quad marshalling the traffic through the works.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215







March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Centre Lines & Edge Lines (Stop/Go on Foot and Marshalling)

Continuously Moving

Single C/W - Wide with Hard Shoulder

All Volumes

RM04

RM04

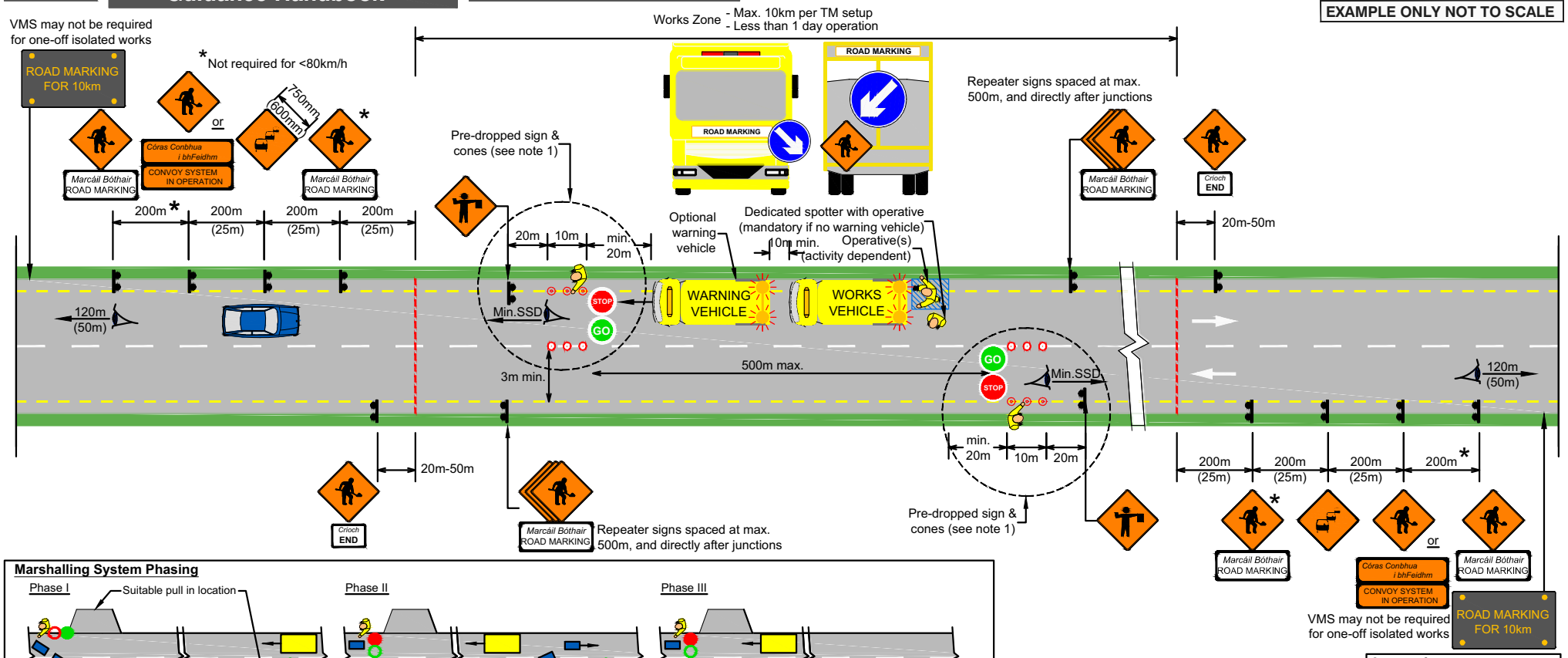
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Marshalling System Phasing

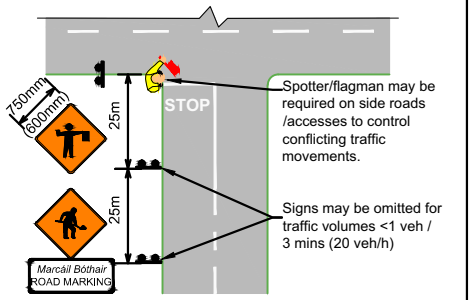
Notes

1. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along the verge.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved. Marshalling system may also be used where sight lines are poor.
5. Marshalling system restricted to Level 4 roads, single carriageway 80/100 km/h and not to be used in poor weather conditions.
6. Traffic must be controlled/stopped by the Stop/Go controls prior to the quad marshalling the traffic through the works.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Side Road Within Stop/Go Setup



Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter
- Operative
- Visibility: 120m (50m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- Stop/Go & Operative
- Marshalling Quad
- Works Area
- Works Zone

March 2014

Stud Fitting Type 1 (Incl. Short Duration Screed)

Edge Lines (Stop/Go on Foot)

Continuously Moving

Single C/W - All Conditions

All Volumes

RM05

RM05

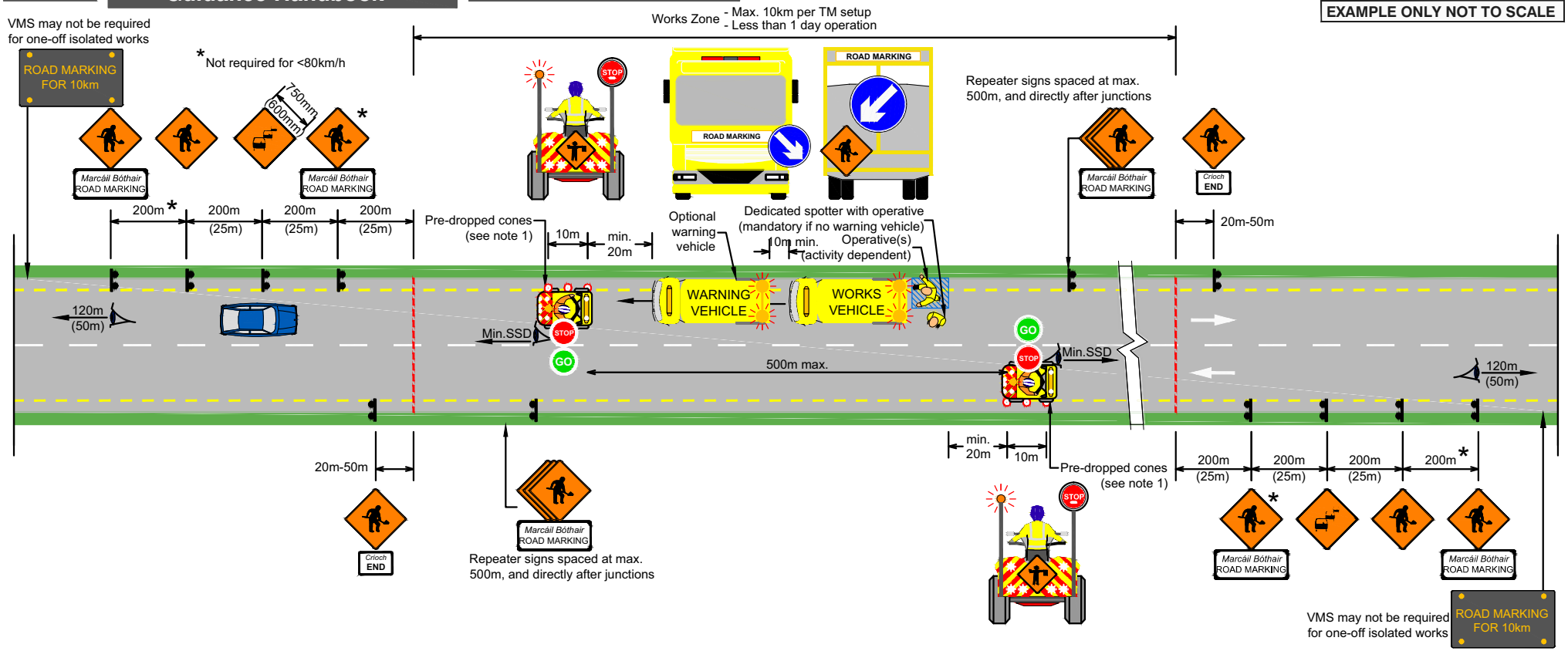
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



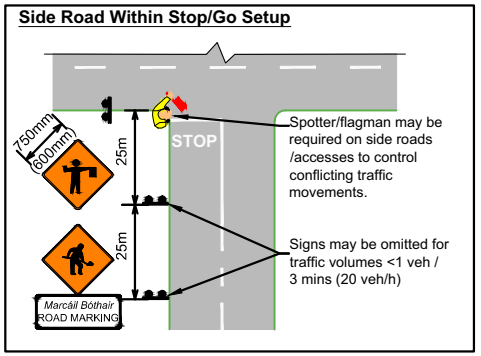
Notes

1. Sets of 'cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
5. Operatives may dismount from quad if required.
6. Max. 500m recommended between Stop/Go controls, subject to risk assessment, min. SSD to be achieved at all times.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Side Road Within Stop/Go Setup



Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility: 120m (50m) relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- Traffic Sign
- Stop/Go on Quad
- Works Area
- Works Zone

March 2014

Stud Fitting Type 1 (Incl. Short Duration Screed)

Edge Lines (Stop/Go on Quad)

Continuously Moving

Single C/W - All Conditions

All Volumes

RM06

RM06

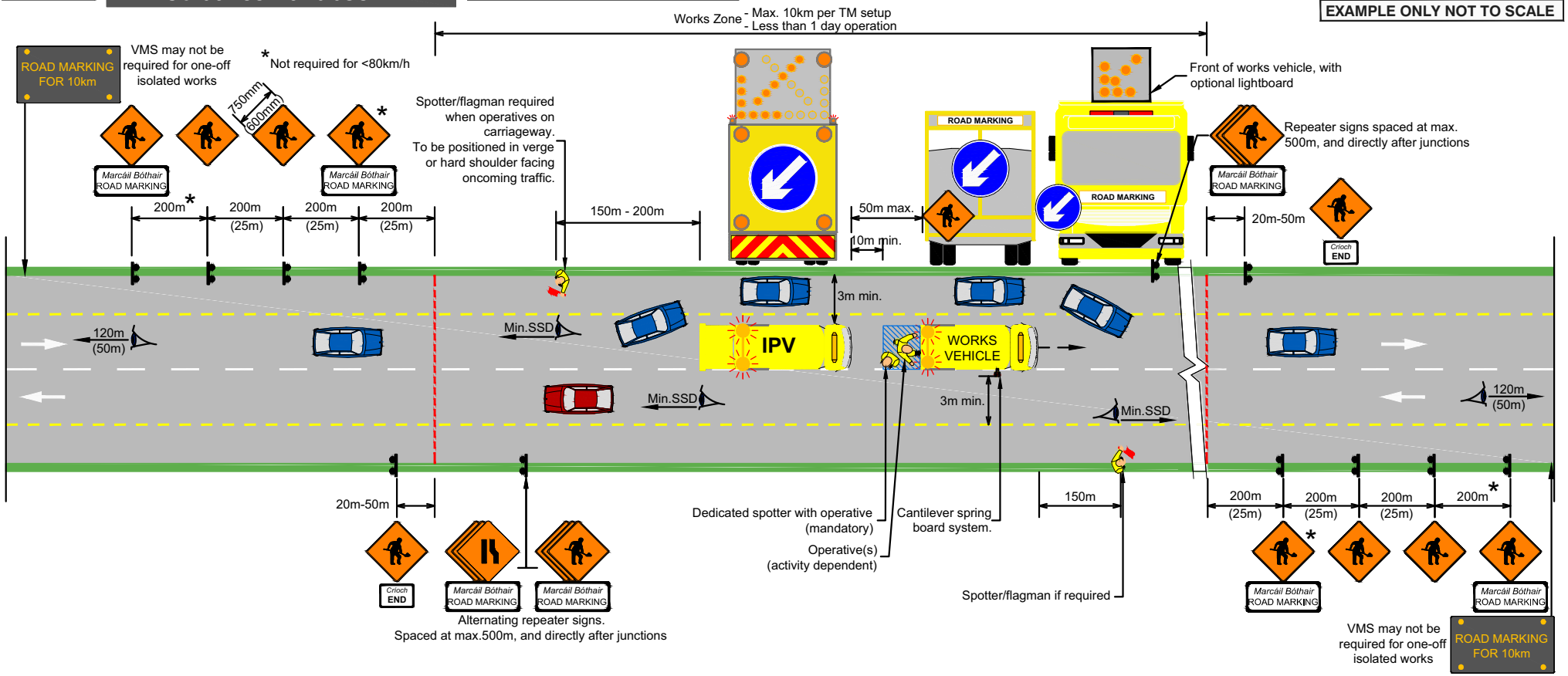
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

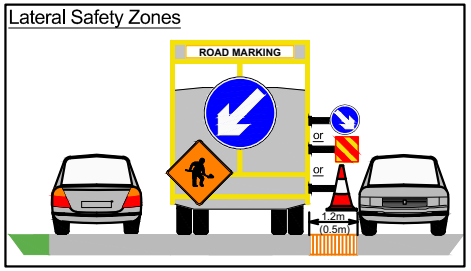
EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

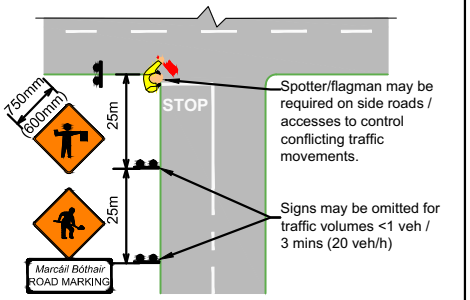
Lateral Safety Zones



Notes

1. Hard shoulders must be in good condition, and a minimum of 3.0m lane width available adjacent to the works, as indicated, must be achievable.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Layout may not be suitable if accesses are present.

Side Road Within Operation



Legend

- Cones (0.75m min)
- Spotter / Flagman
- Operative
- Visibility: 120m (50m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- Works Area
- Works Zone

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Centre Lines Only (2-Way Traffic Maintained - Working From Running Lanes)

Continuously Moving

Single C/W - Wide with Hard Shoulder

All Volumes

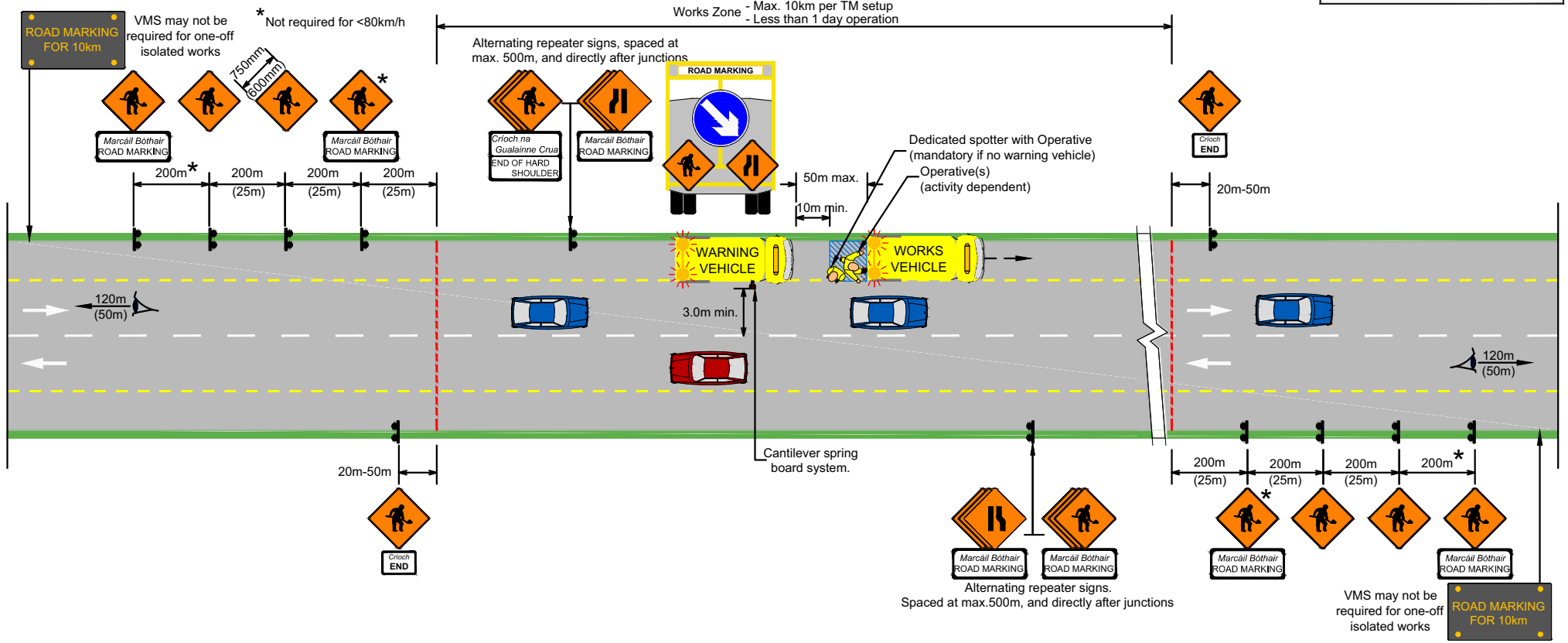
RM07

RM07

Road Marking

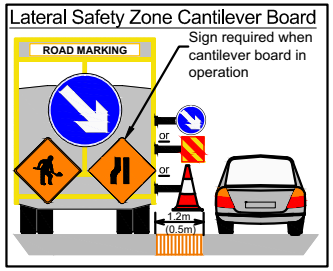
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



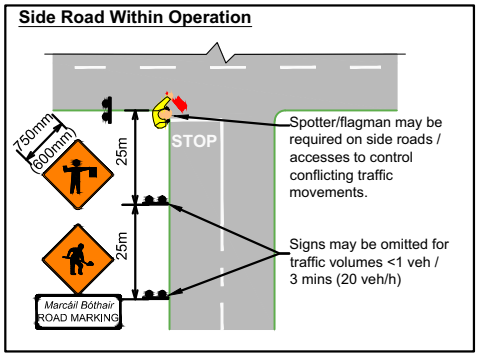
SSD Parameters

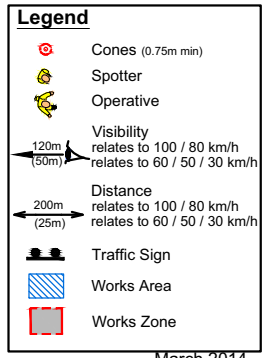
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Additional spotter(s) may be required, depending on the activity.





March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Edge Lines Only (2-Way Traffic Maintained - Working From Hard Shoulder)

Continuously Moving

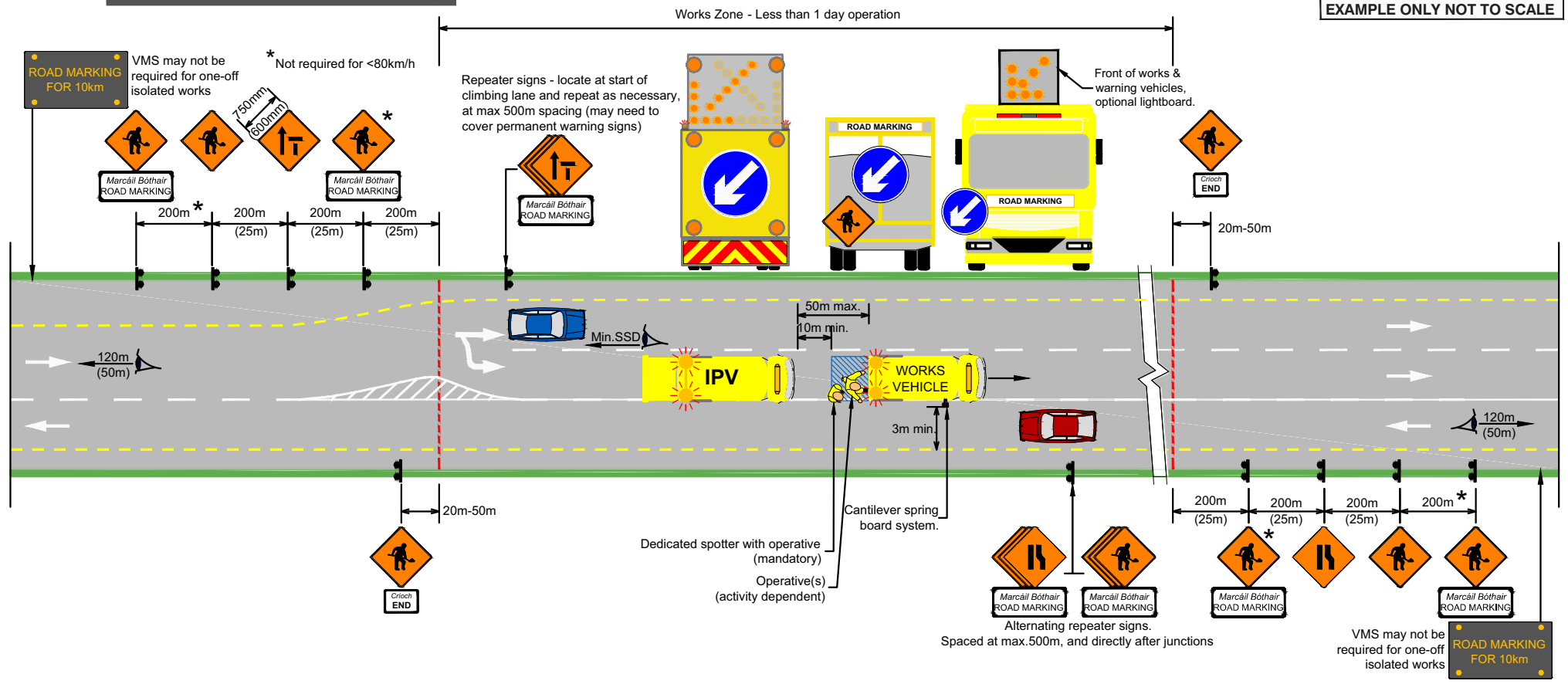
Single C/W - With Hard Shoulder
All Volumes

RM08

Road Marking

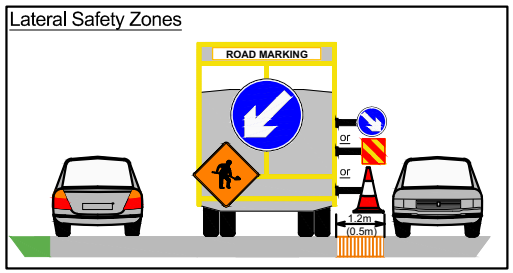
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



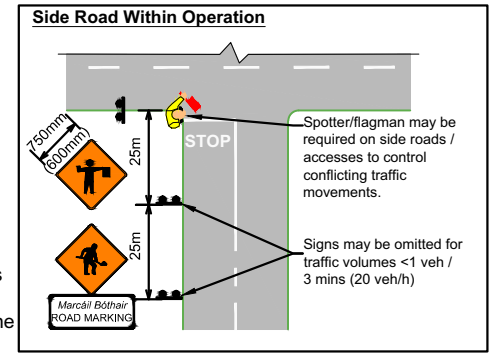
SSD Parameters

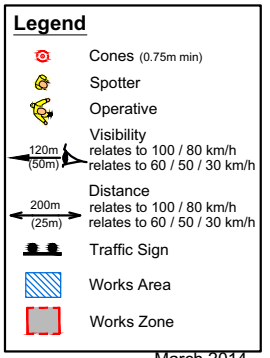
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Additional spotter(s) may be required, depending on the activity.





March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Climbing Lane (2-Way Traffic Maintained - Working From Climbing Lane)

Continuously Moving

Single C/W

All Volumes

RM09

RM09

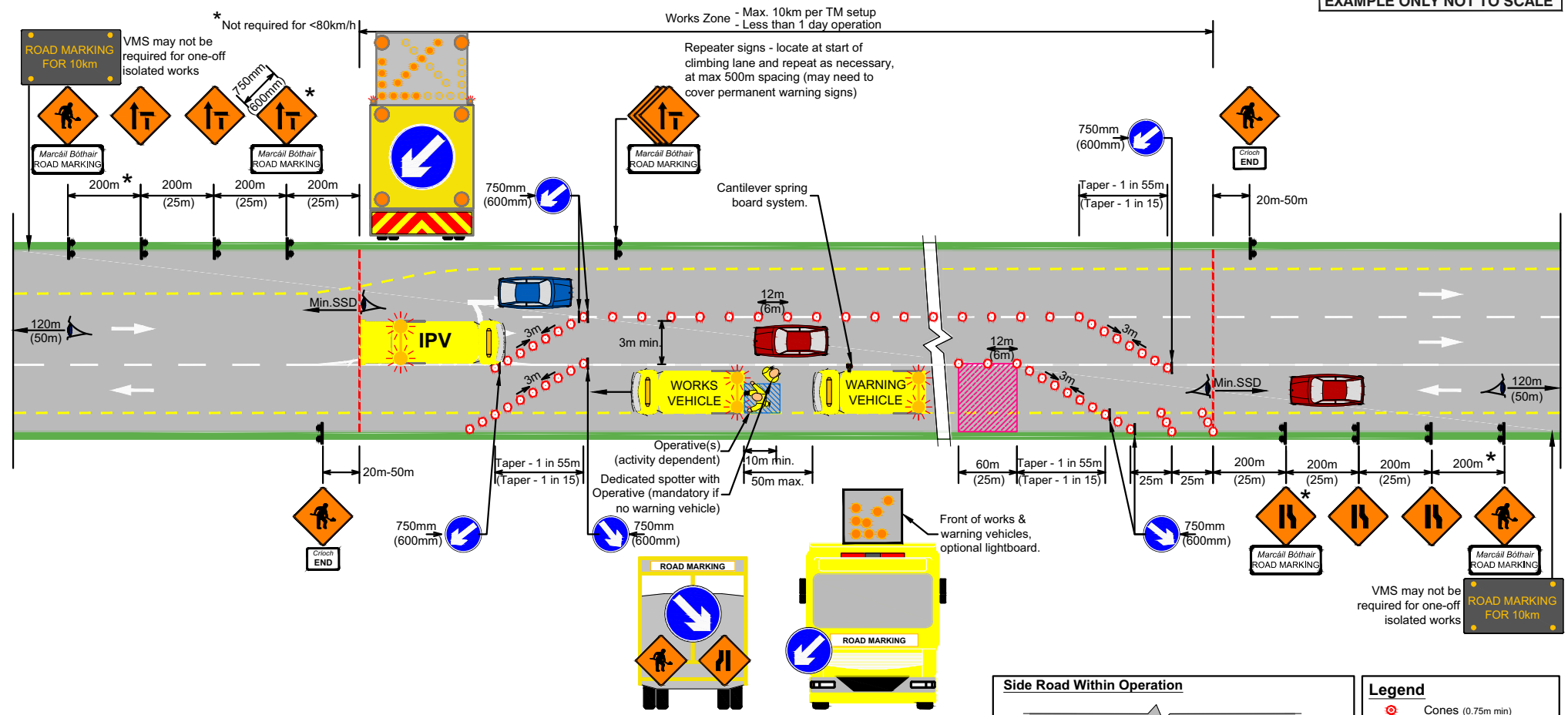
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

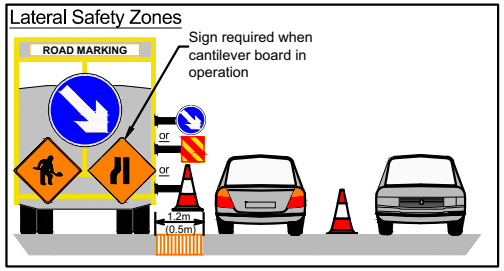
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



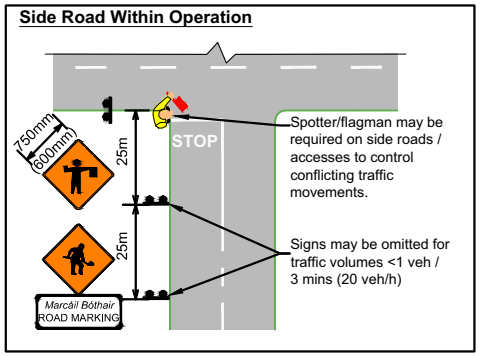
SSD Parameters

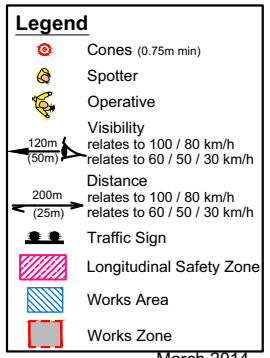
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Additional spotter(s) may be required, depending on the activity.





March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Climbing Lane (2-Way Traffic Maintained - Working Opposite Climbing Lane)

Continuously Moving

Single C/W

All Volumes

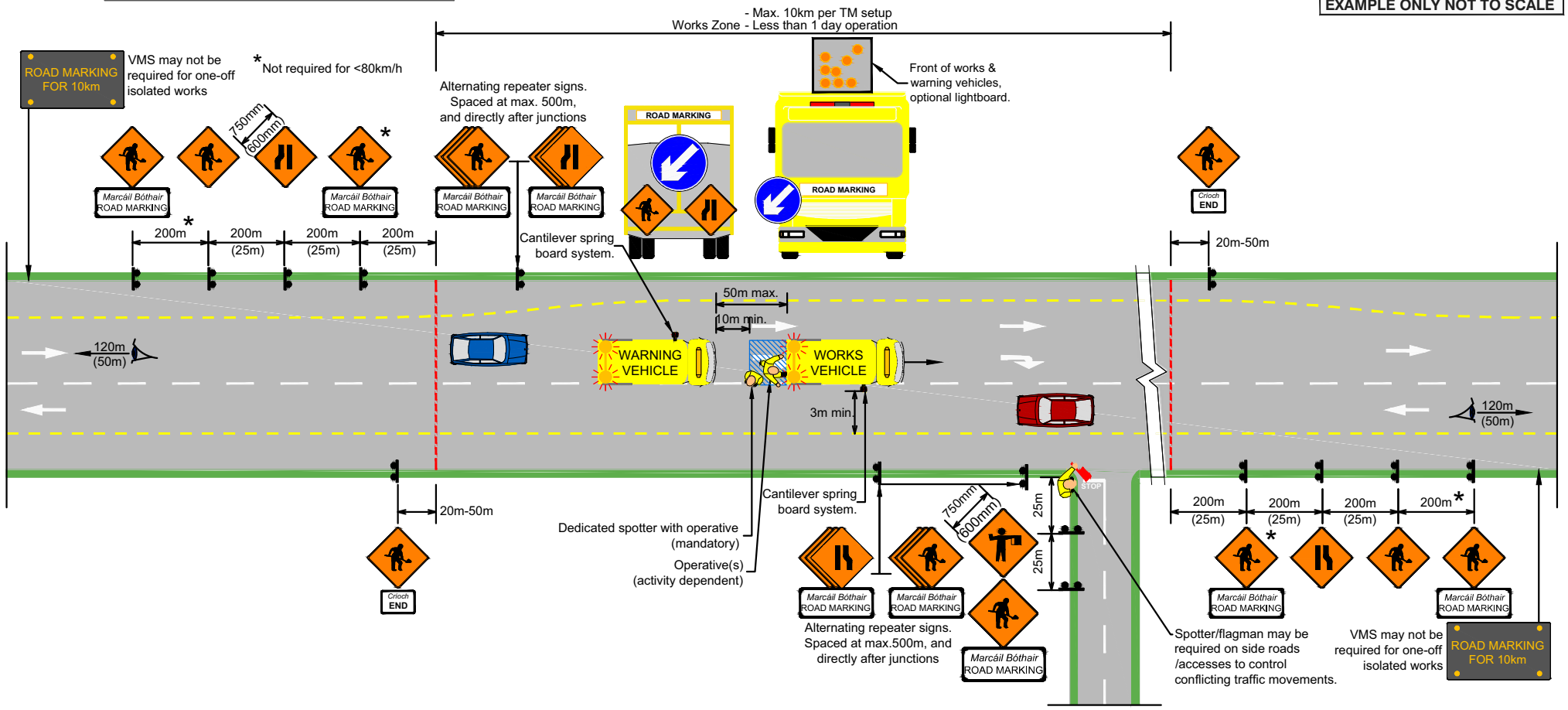
RM10

RM10

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

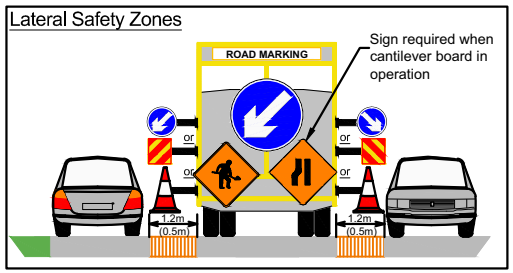
EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Lateral Safety Zones



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Additional spotter(s) may be required, depending on the activity.
3. For edge line stud works in the lane opposite to the passing bay, refer to layout RM07 if there is sufficient width in the hard shoulder, if not, Stop/Go must be implemented.

Legend

- Cones (0.75m min)
- Spotter / Flagman
- Operative
- Visibility 120m (50m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance 200m (25m) — relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- Works Area
- Works Zone

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Nearside Passing Bay (2-Way Traffic Maintained)

Continuously Moving

Single C/W

All Volumes

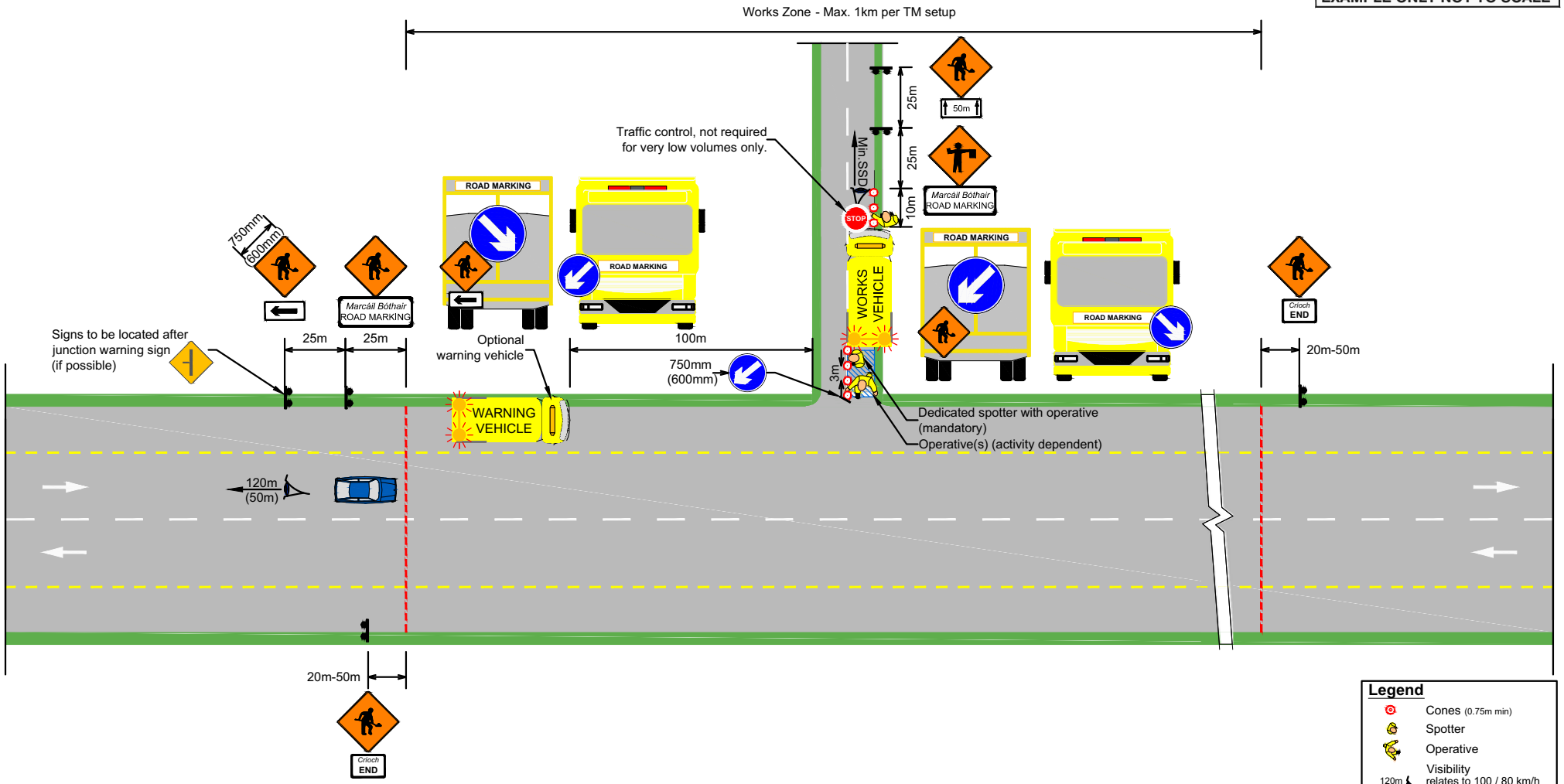
RM11

RM11

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. Traffic control on minor road not required for low volumes, < 20veh/3mins (400veh/hr). 3 minute traffic counts should be carried out at regular intervals to monitor flows.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) / flagmen may be required depending on the activity.
4. If a warning vehicle is part of the operation, the advance signs can be mounted on the rear of the warning vehicle.
5. The warning vehicle must pull into the verge as much as possible to ensure minimal encroachment on the running lane.
6. For junctions with poor visibility, the warning vehicle is to be located in advance where full SSD is available.

Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility — 120m (50m) — relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- 25m — Distance
- Traffic Sign
- All Stop & Operative
- Works Area
- Works Zone

March 2014

Screed Applied Markings

Stop Line on Approach Road - T-Junction (All Stop)

Static

Single C/W - With Hard Shoulder

All Volumes

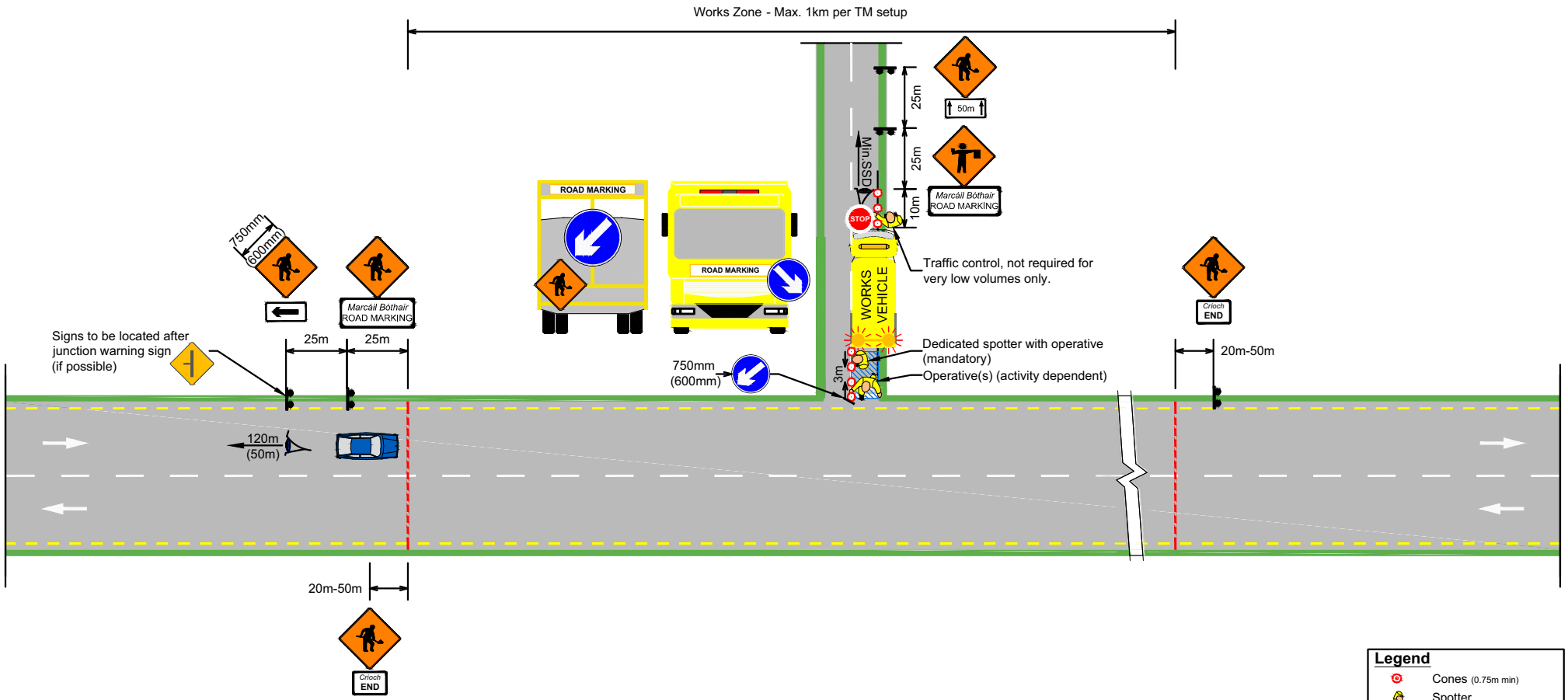
RM12

RM12

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility — 120m (50m) — relates to 100 / 80 km/h, relates to 60 / 50 / 30 km/h
- 25m — Distance
- Traffic Sign
- All Stop & Operative
- Works Area
- Works Zone

SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. Traffic control not required for low volumes, < 20veh/3mins (400veh/hr). 3 minute traffic counts should be carried out at regular intervals to monitor flows.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) / flagmen may be required depending on the activity.

March 2014

Screed Applied Markings

Stop Line on Approach Road - T-Junction (All Stop)

Static

Single C/W - No Hard Shoulder

All Volumes

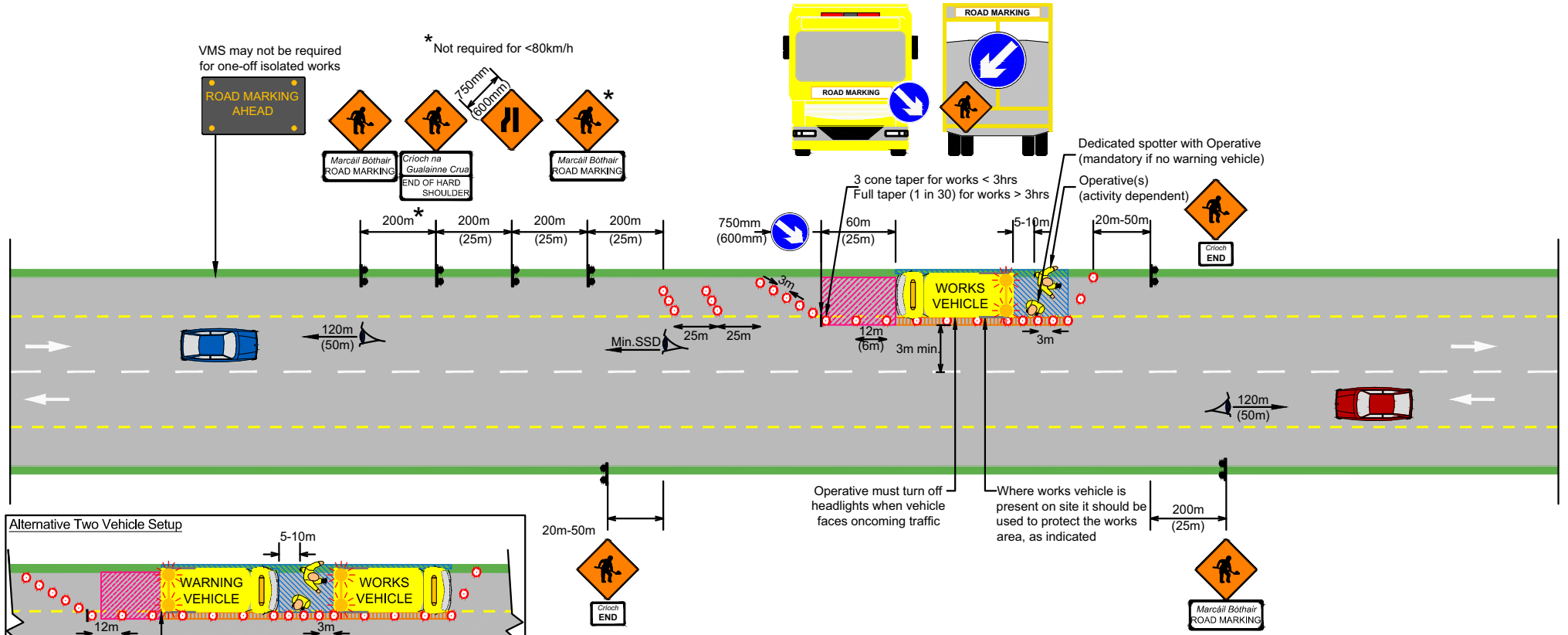
RM13

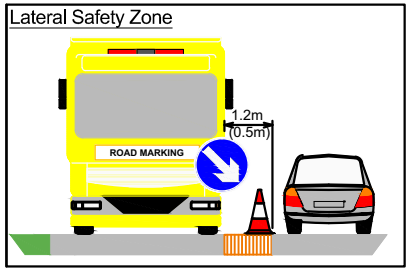
RM13

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



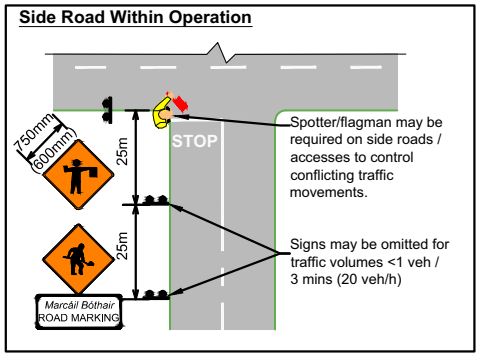


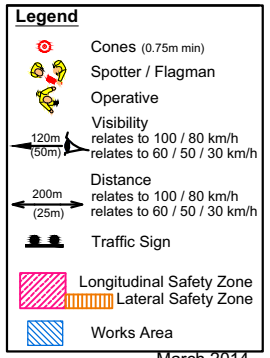
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Additional spotter(s) may be required, depending on the activity.
3. 3m cone spacing required adjacent to works area/operatives.
4. For the alternative two vehicle setup, cones may not be required if cantilever board or similar is used to provide a lateral safety zone.





March 2014

Screed Applied Markings

Mainline Carriageway (2-Way Traffic Maintained - Working from Hard Shoulder)

Static

Single C/W - With Hard Shoulder

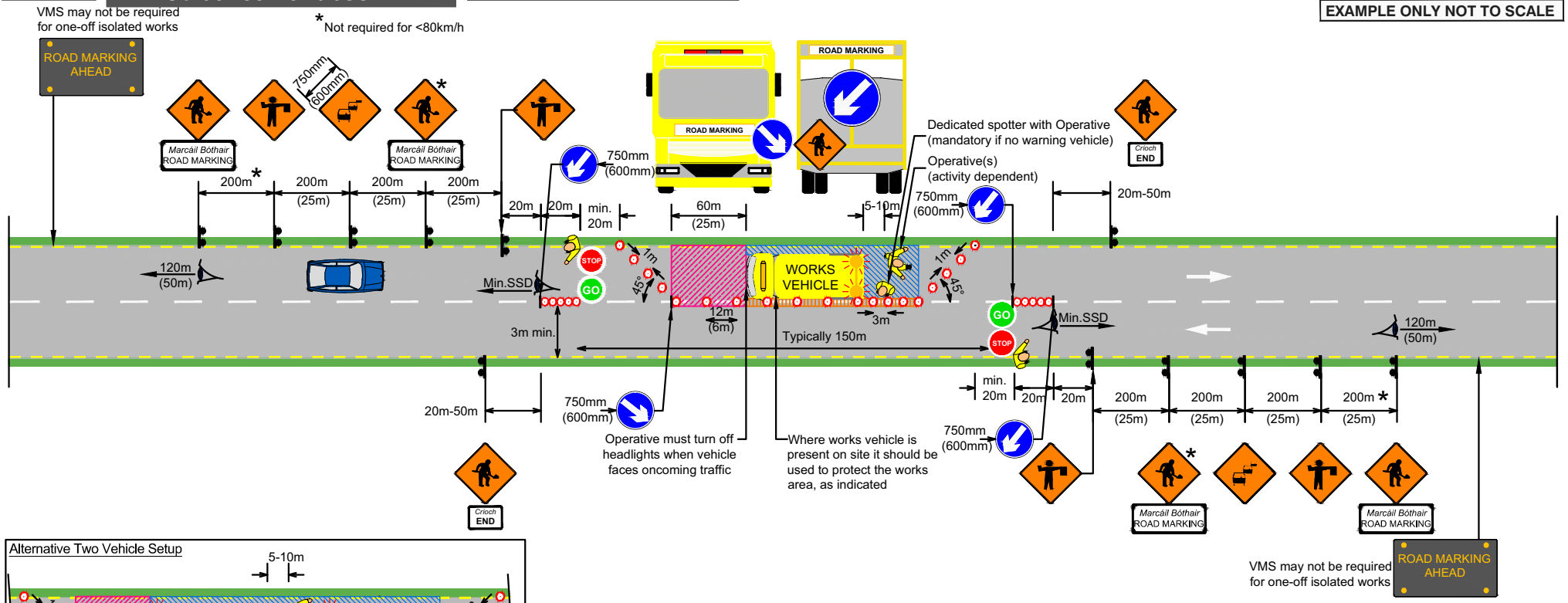
All Volumes

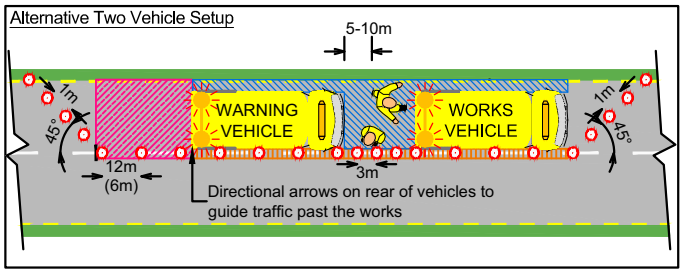
RM14

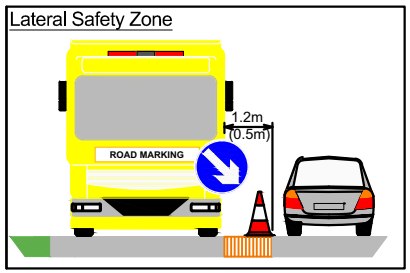
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE





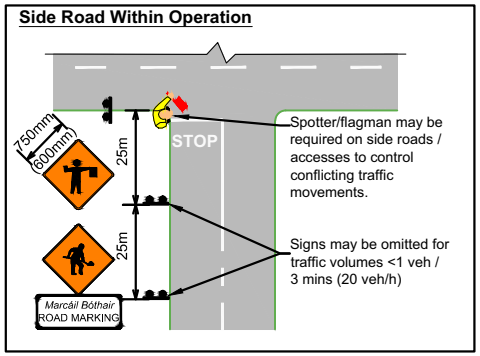


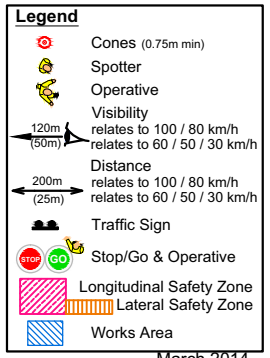
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. This setup can also be used within a 10km work zone. Refer to RM01.
2. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
3. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
4. Additional spotter(s) may be required, depending on the activity.
5. 3m cone spacing required adjacent to works area/operatives.
6. 3-way Stop/Go required for busy side roads within operation.
7. For the alternative two vehicle setup, cones may not be required if cantilever board or similar is used to provide a lateral safety zone.





March 2014

Screed Applied Markings

Mainline Carriageway (Stop/Go - Working From Running Lanes)

Static

Single C/W - No Hard Shoulder

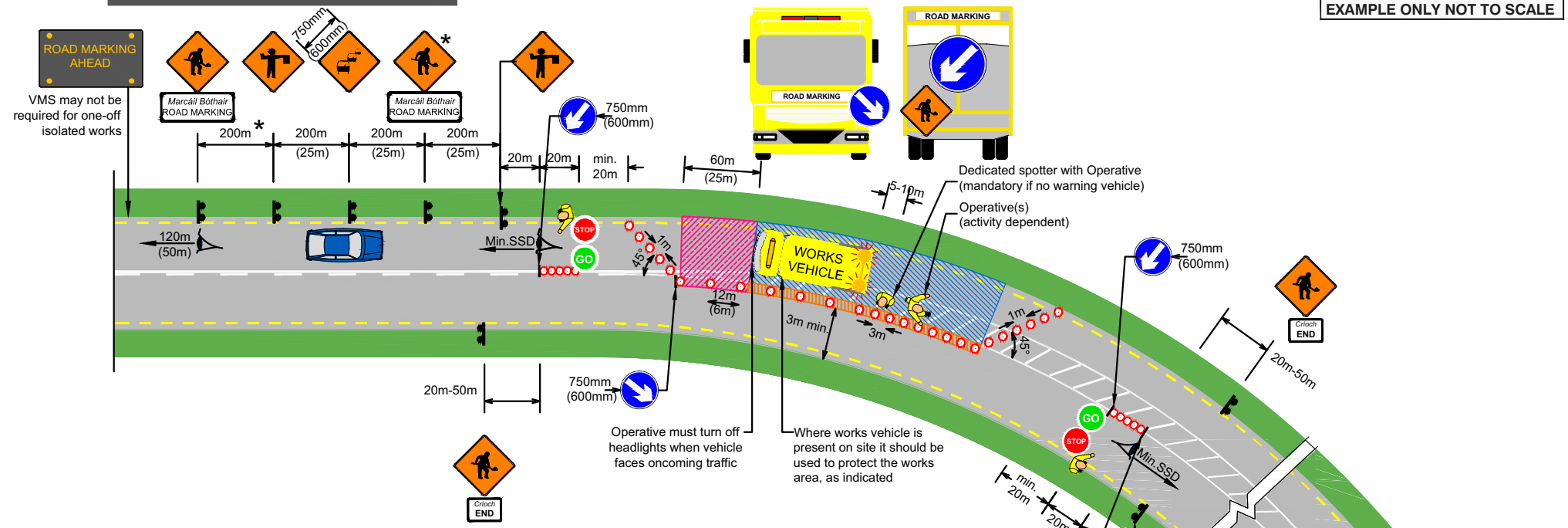
All Volumes

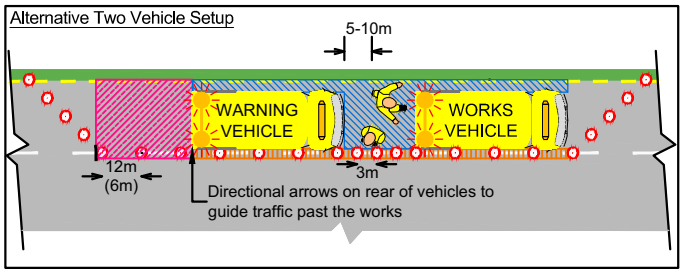
RM15

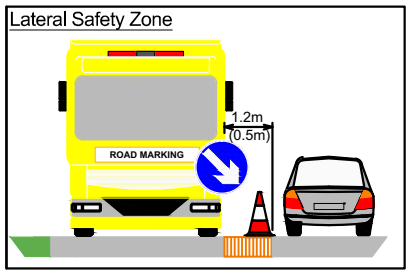
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE





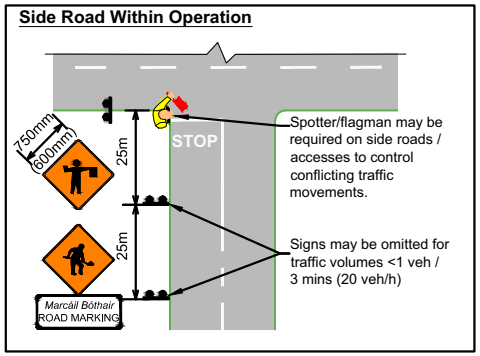


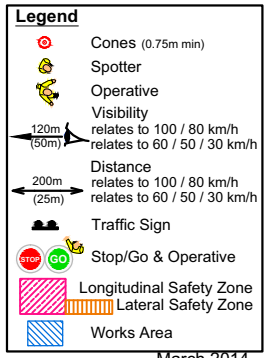
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. This setup can also be used within a 10km work zone. Refer to RM01.
2. Where sight lines are poor, e.g. on bends, Stop/Go to operate from either end of the bends, where min SSD can be achieved.
3. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
4. Additional spotter(s) may be required, depending on the activity.
5. 3m cone spacing required adjacent to works area/operatives.
6. 3-way Stop/Go required for busy side roads within operation.
7. For the alternative two vehicle setup, cones may not be required if cantilever board or similar is used to provide a lateral safety zone.





March 2014

Screed Applied Markings

Mainline Carriageway - Hatching On Bend (Stop/Go)

Static

Single C/W - All Conditions

All Volumes

RM16

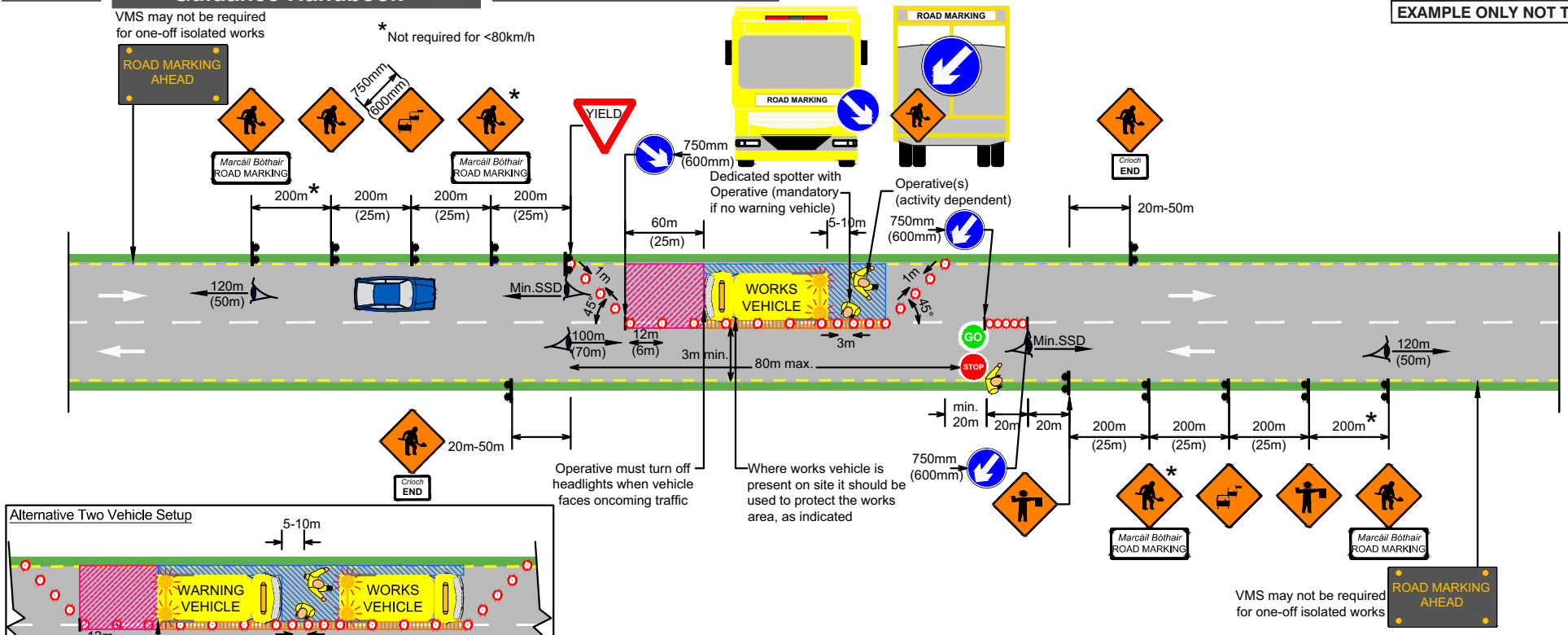
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

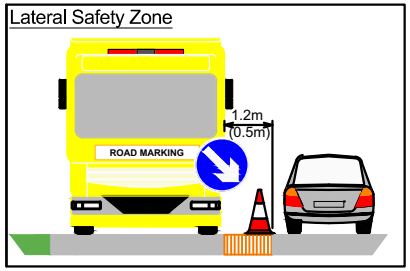
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



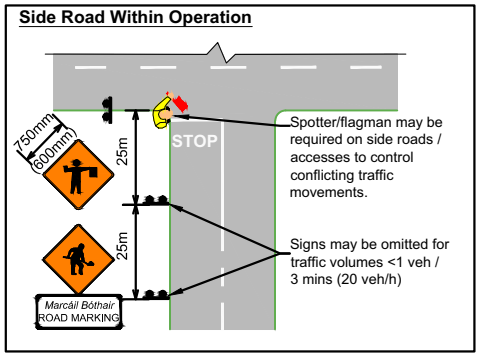
SSD Parameters

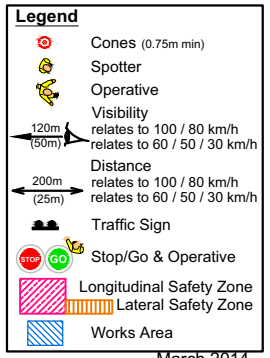
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215



Notes

1. This setup can also be used within a 10km work zone. Refer to RM01.
2. Traffic volumes restricted to 20veh/3mins (400veh/hr), otherwise full Stop/Go must be implemented as per RM15.
3. 3 minute traffic counts should be carried out at regular intervals to ensure flows are not exceeded.
4. Where sight lines are poor, refer to RM15.
5. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
6. Additional spotter(s) may be required, depending on the activity.
7. 3m cone spacing required adjacent to works area/operatives.
8. 3-way Stop/Go required for busy side roads within operation.
9. For the alternative two vehicle setup, cones may not be required if cantilever board or similar is used to provide a lateral safety zone.





March 2014

Screed Applied Markings

Mainline Carriageway (Stop/Go & Priority Yield - Working From Running Lanes)

Static

Single C/W - All Conditions

Low Volumes - Good Sight Lines Only

RM17

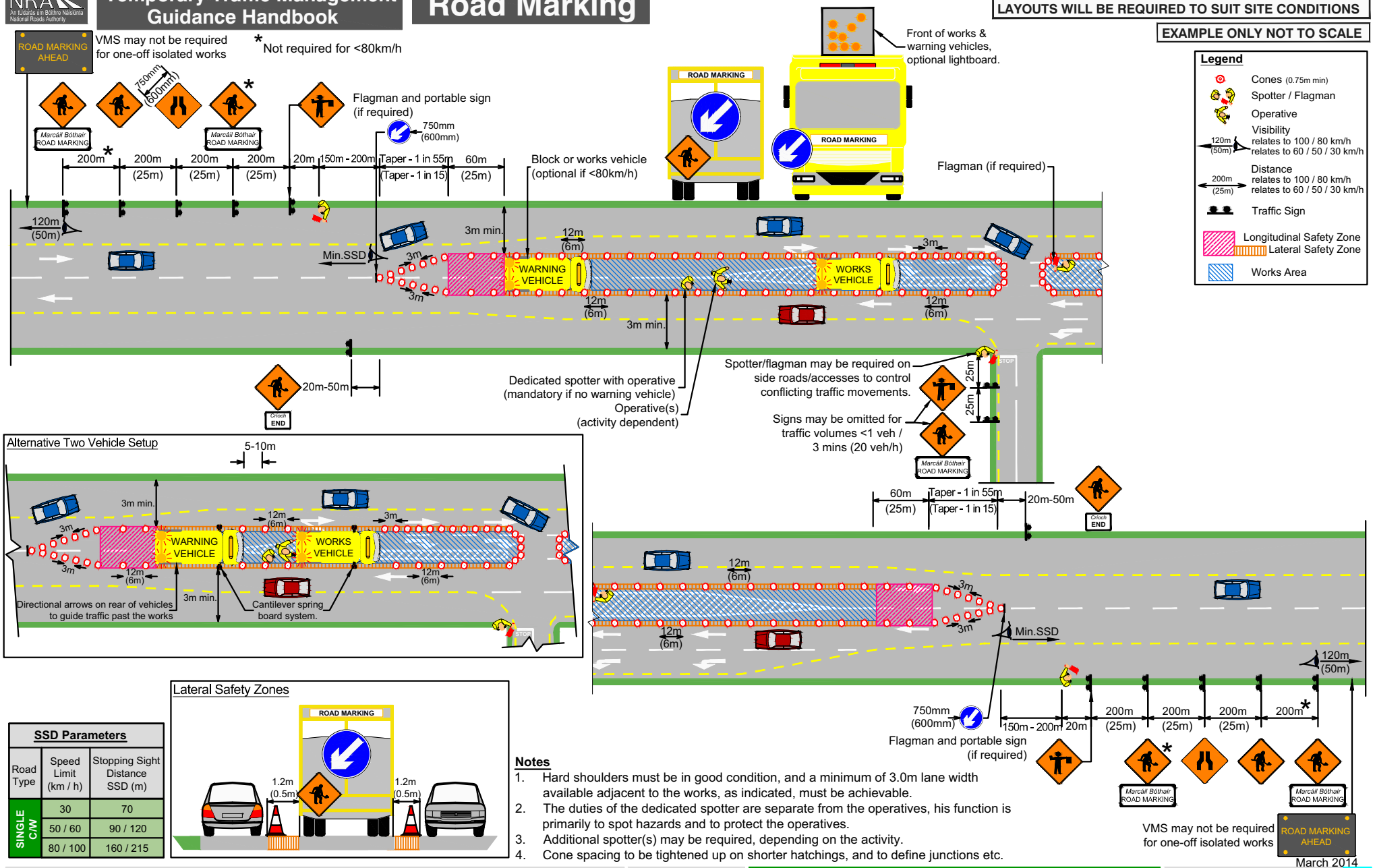
RM17

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. Hard shoulders must be in good condition, and a minimum of 3.0m lane width available adjacent to the works, as indicated, must be achievable.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
3. Additional spotter(s) may be required, depending on the activity.
4. Cone spacing to be tightened up on shorter hatchings, and to define junctions etc.

March 2014

Screed Applied Markings

Ghost/Central Island (2-Way Traffic Maintained)

Static

Single C/W - With hard Shoulder

All Volumes

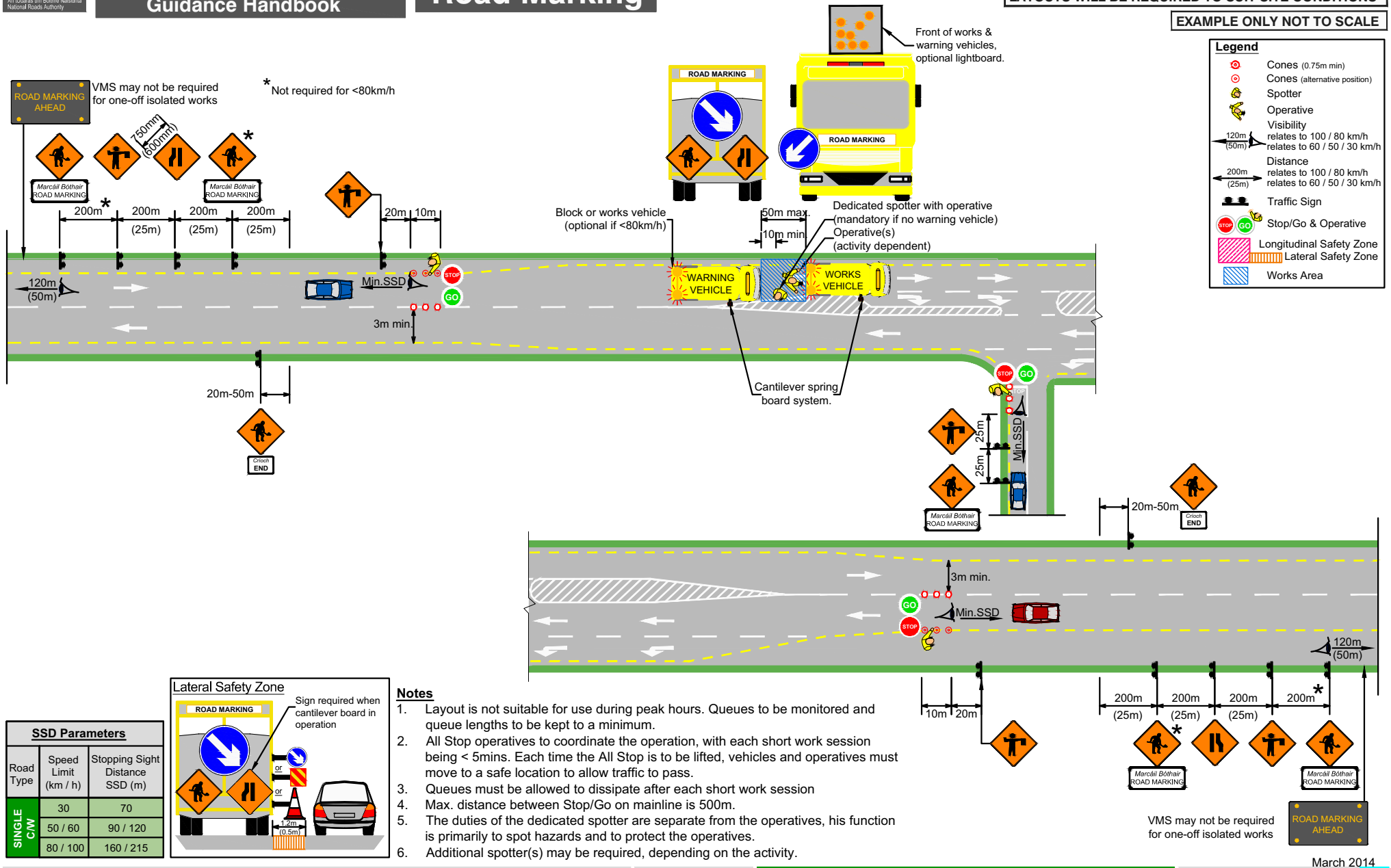
RM18

RM18

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Notes

1. Layout is not suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
2. All Stop operatives to coordinate the operation, with each short work session being < 5mins. Each time the All Stop is to be lifted, vehicles and operatives must move to a safe location to allow traffic to pass.
3. Queues must be allowed to dissipate after each short work session
4. Max. distance between Stop/Go on mainline is 500m.
5. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
6. Additional spotter(s) may be required, depending on the activity.

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

Ghost/Central Island (3-way Stop/Go)

Static

Single C/W - No hard Shoulder

All Volumes

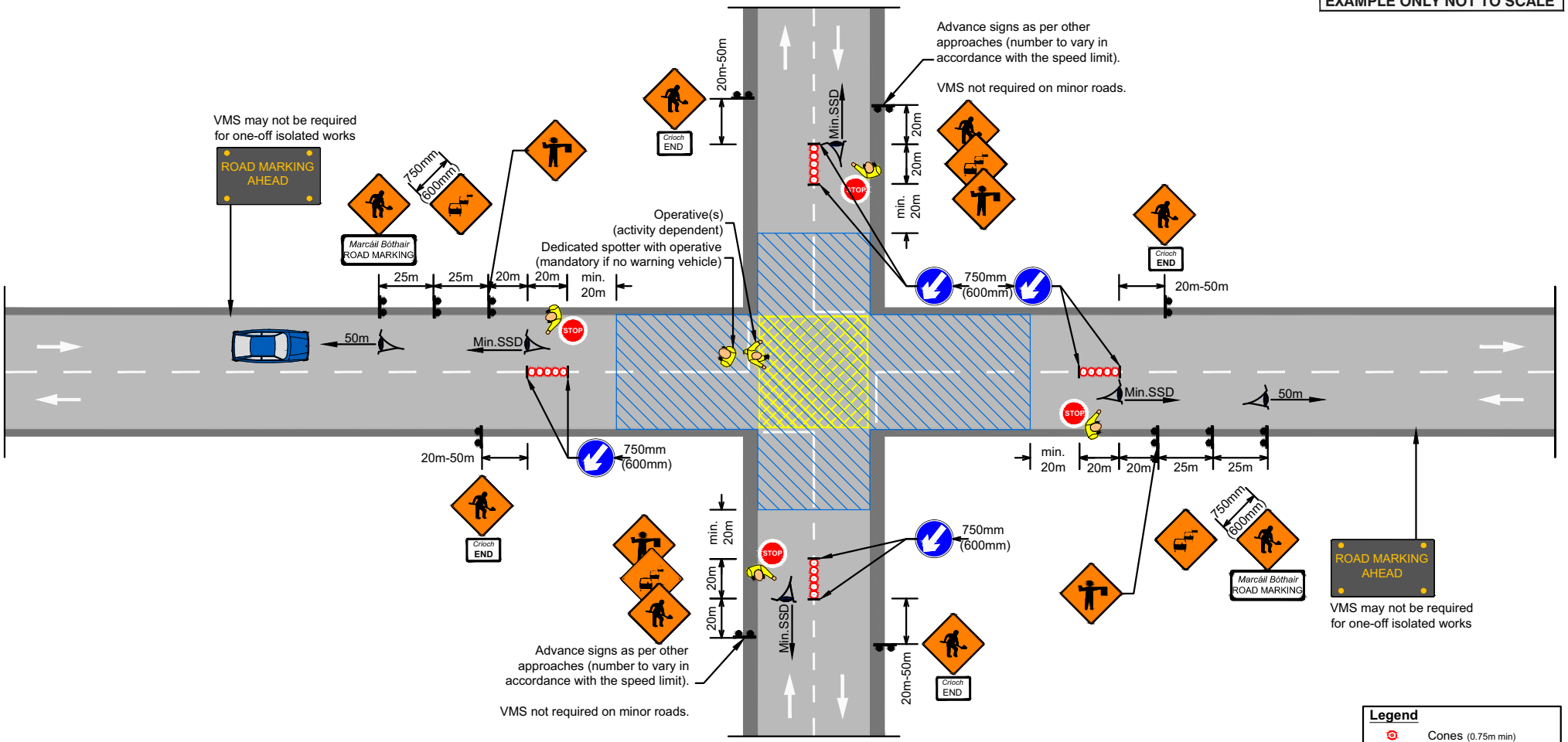
RM19

RM19

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Notes

1. Layout is not suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
2. All Stop operatives to coordinate the operation, with each short work session being < 5mins. Each time the All Stop is to be lifted, vehicles and operatives must move to a safe location to allow traffic to pass.
3. Queues must be allowed to dissipate after each short work session.
4. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
5. Additional spotter(s) / flagmen may be required depending on the activity.
6. TM on each arm can vary in line with the approach arm speed limits.
7. Work vehicles to be parked in a suitably safe location.
8. Pedestrians may need to be directed through the works.
9. Signal heads may need to be covered.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120

Legend

- Cones (0.75m min)
- Spotter
- Operative
- 50m — Visibility relates to 60 / 50 / 30 km/h
- 25m — Distance relates to 60 / 50 / 30 km/h
- Traffic Sign
- All Stop & Operative
- Works Area

March 2014

Screed Applied Markings

Urban/Signalised Junction (All Stop)

Static

Single C/W - All Conditions

Off-Peak Only

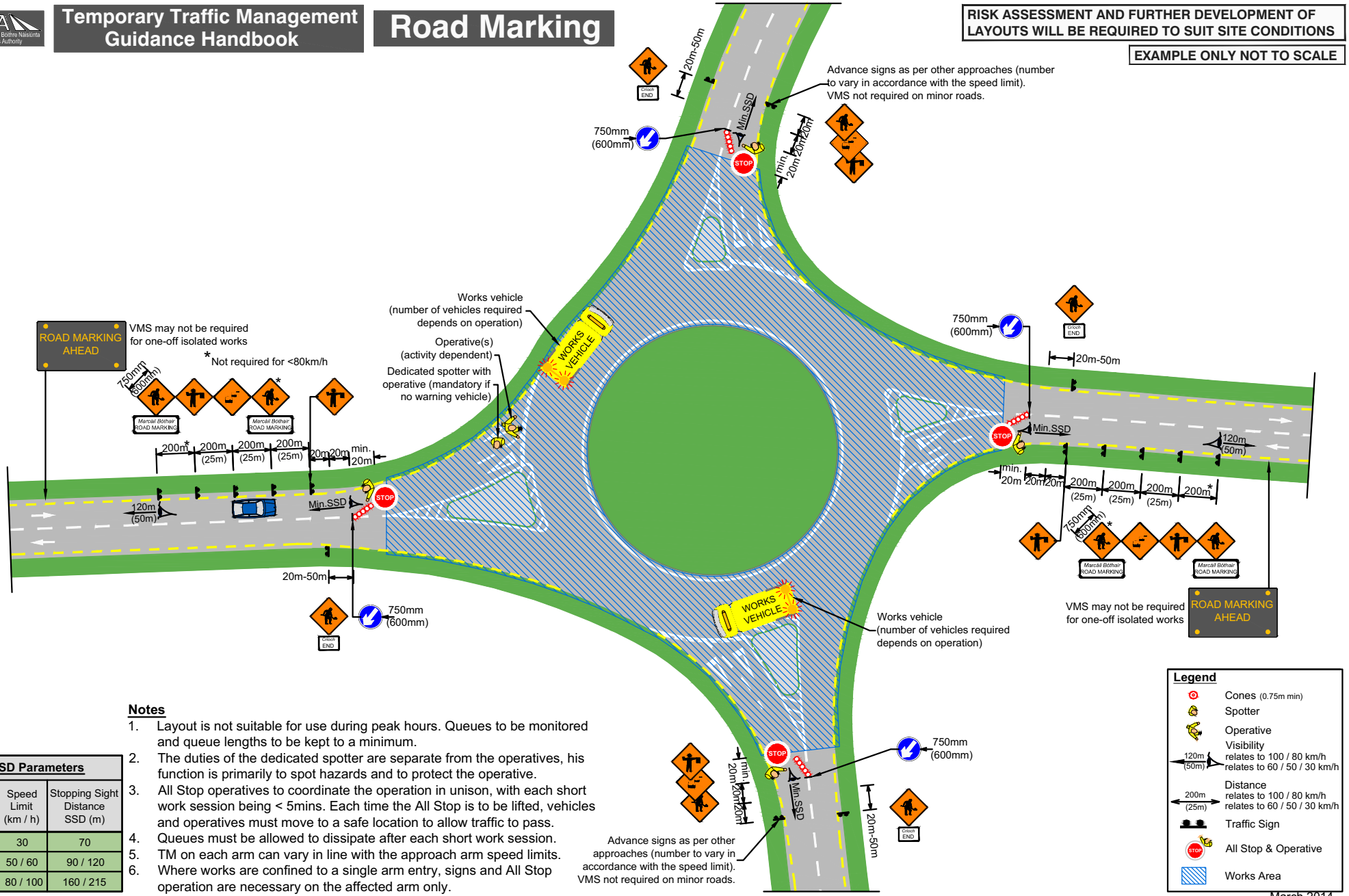
RM20

RM20

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Notes

1. Layout is not suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. All Stop operatives to coordinate the operation in unison, with each short work session being < 5mins. Each time the All Stop is to be lifted, vehicles and operatives must move to a safe location to allow traffic to pass.
4. Queues must be allowed to dissipate after each short work session.
5. TM on each arm can vary in line with the approach arm speed limits.
6. Where works are confined to a single arm entry, signs and All Stop operation are necessary on the affected arm only.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility: 120m (50m) relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Distance: 200m (25m) relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h
- Traffic Sign
- All Stop & Operative
- Works Area

March 2014

Roundabout Markings

All Works Areas (All Stop)

Static

Single C/W - Roundabout

Off-Peak Only

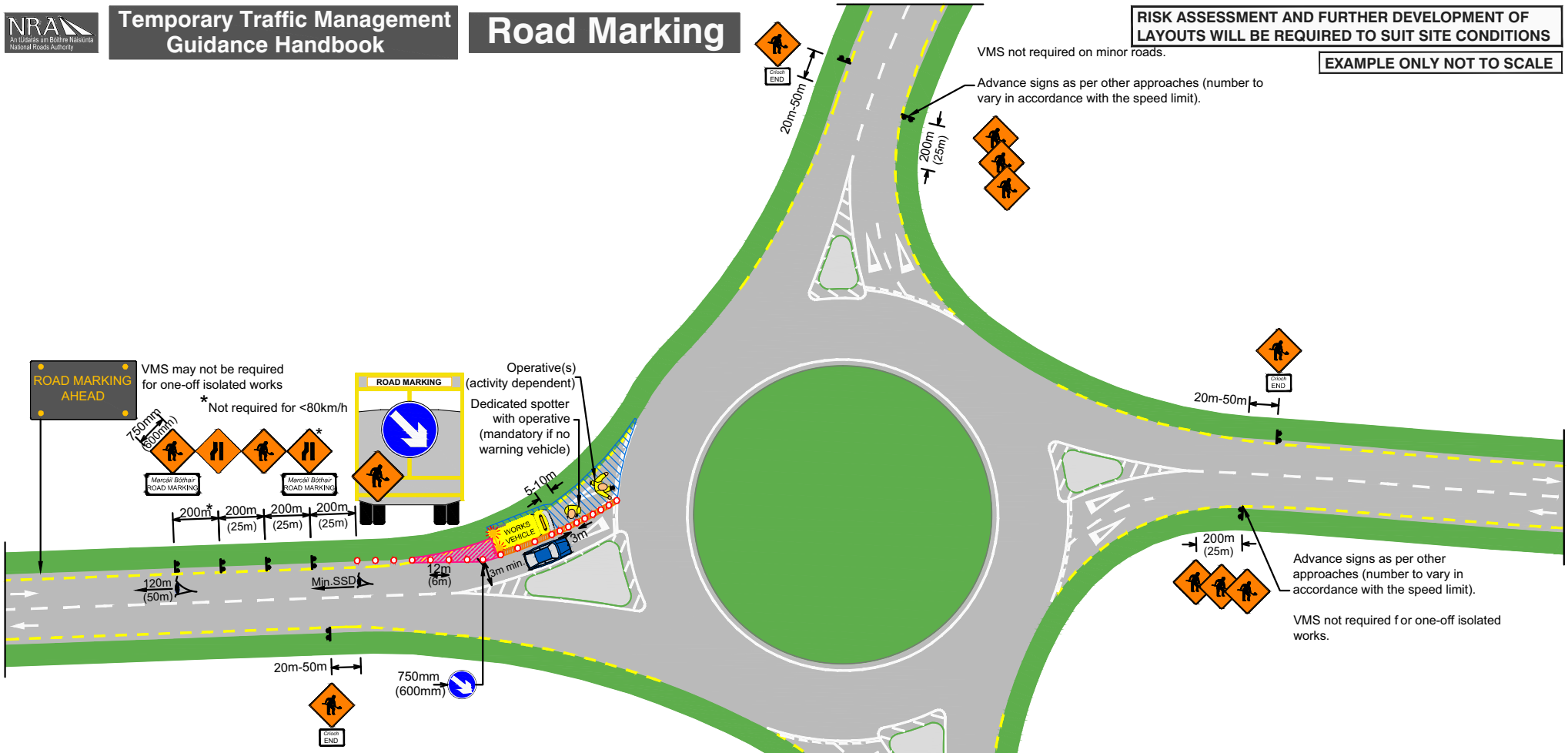
RM21

RM21

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Cone taper lengths may be altered to suit site conditions.
3. TM on each arm can vary in line with the approach arm speed limits.
4. Layout may not be suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
5. If minimum lane widths are not achievable, All Stop is recommended as per RM21.
6. Signs may be reduced on unaffected approaches upon risk assessment.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

March 2014

Roundabout Markings

Left Entry Lane (Traffic Flow Maintained)

Static

Single C/W - Roundabout

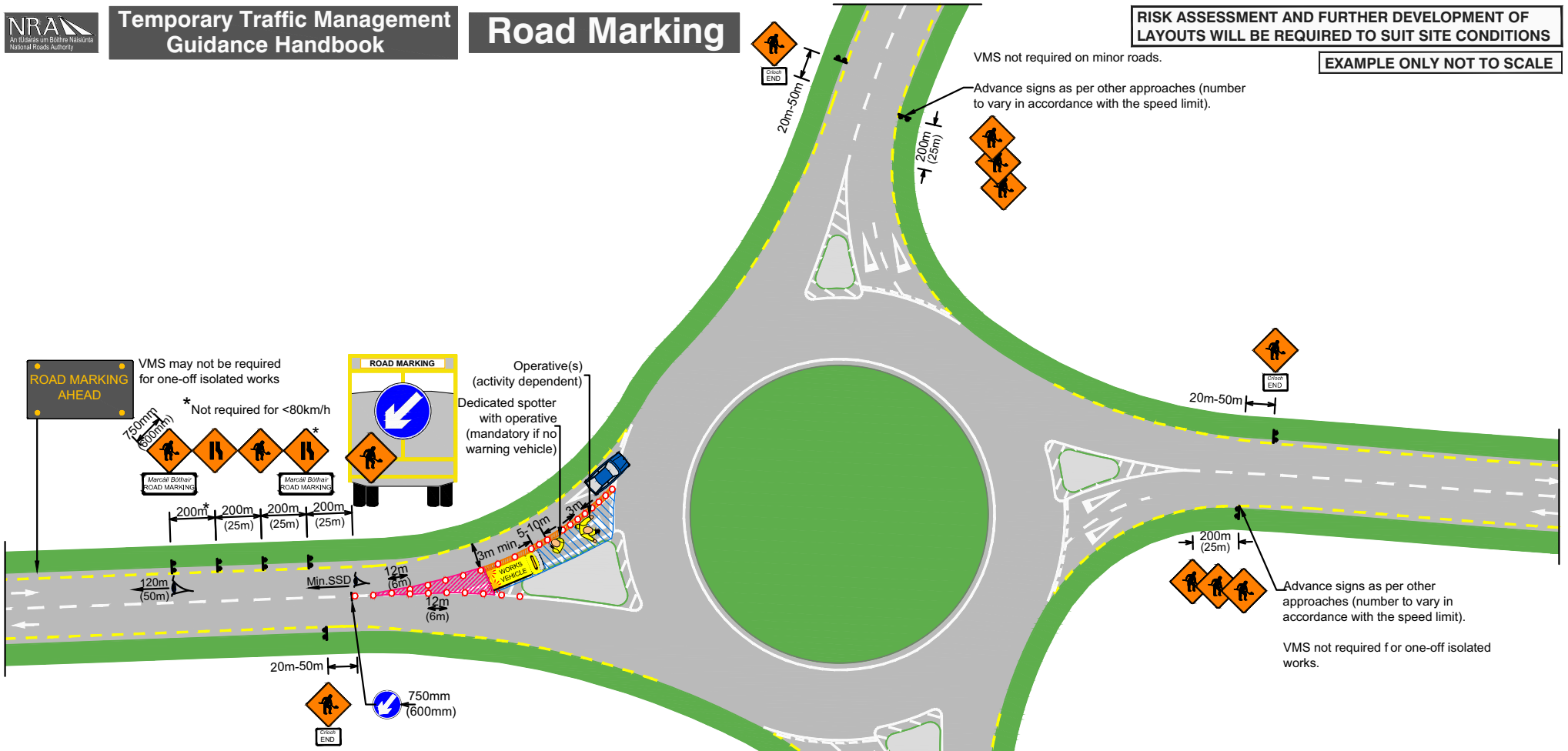
All Volumes

RM22

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. Cone taper lengths may be altered to suit site conditions.
3. TM on each arm can vary in line with the approach arm speed limits.
4. Layout may not be suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
5. If minimum lane widths are not achievable, All Stop is recommended as per RM21.
6. Signs may be reduced on unaffected approaches upon risk assessment.
7. Traffic island markings to be carried out using RM21.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120
	80 / 100	160 / 215

March 2014

Roundabout Markings

Right Entry Lane (Traffic Flow Maintained)

Static

Single C/W - Roundabout

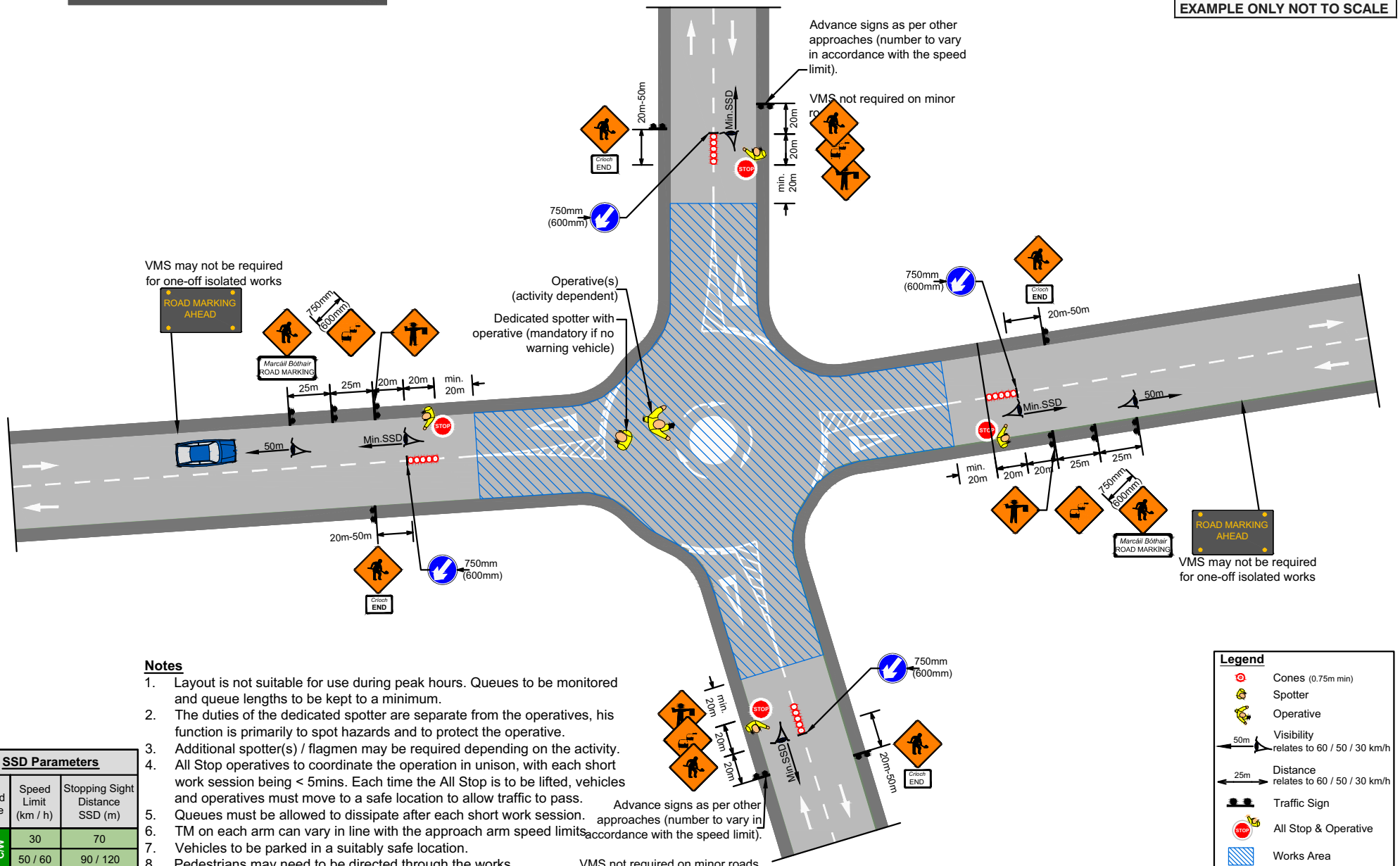
All Volumes

RM23

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



Notes

1. Layout is not suitable for use during peak hours. Queues to be monitored and queue lengths to be kept to a minimum.
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity.
4. All Stop operatives to coordinate the operation in unison, with each short work session being < 5mins. Each time the All Stop is to be lifted, vehicles and operatives must move to a safe location to allow traffic to pass.
5. Queues must be allowed to dissipate after each short work session.
6. TM on each arm can vary in line with the approach arm speed limits.
7. Vehicles to be parked in a suitably safe location.
8. Pedestrians may need to be directed through the works.

SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
SINGLE C/W	30	70
	50 / 60	90 / 120

Legend

- Cones (0.75m min)
- Spotter
- Operative
- Visibility relates to 60 / 50 / 30 km/h (50m)
- Distance relates to 60 / 50 / 30 km/h (25m)
- Traffic Sign
- All Stop & Operative
- Works Area

March 2014

Roundabout Markings

All Works Areas (All Stop)

Static

Single C/W - Mini Roundabout

Off-Peak Only

RM24

RM24

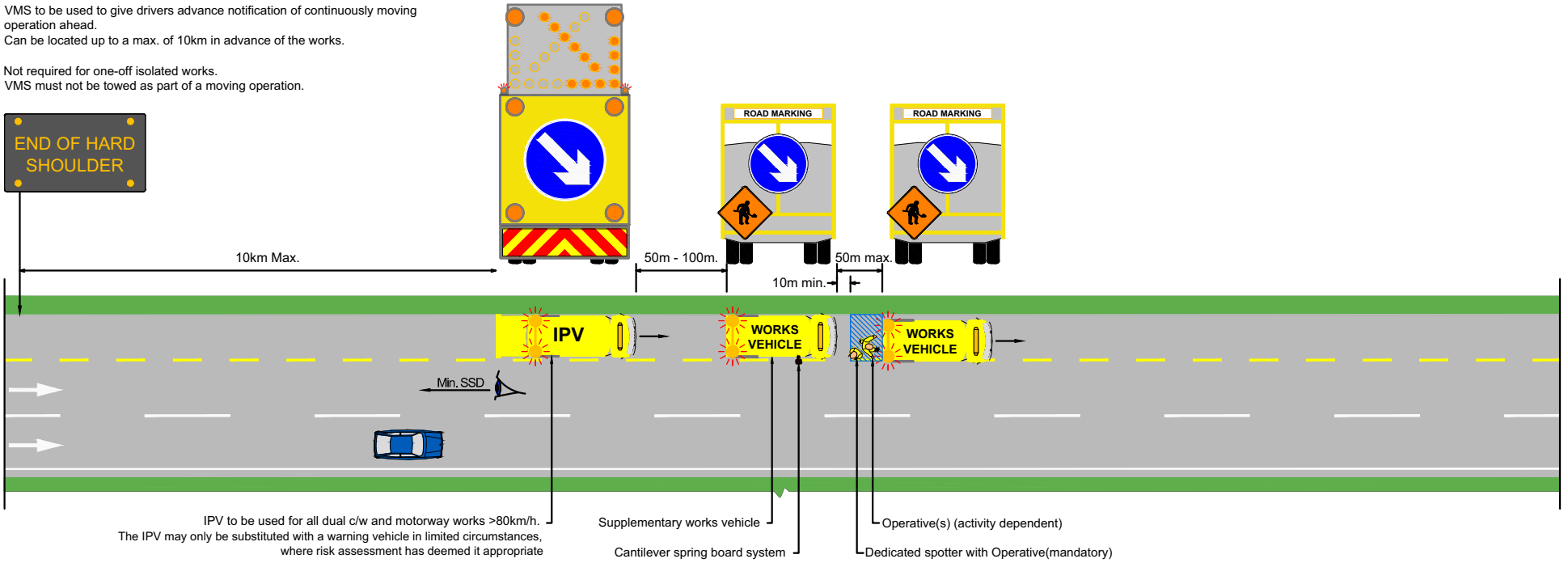
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

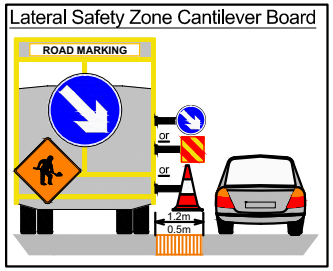
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

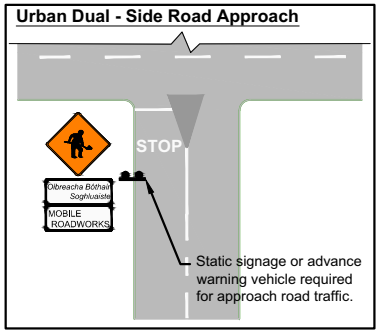
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Maximum stop permitted is 15 minutes.
4. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Hard Shoulder Line/Bus Lane Line (Hard Shoulder Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2-Lane (Off-Peak Only) - with H/S

RM25

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

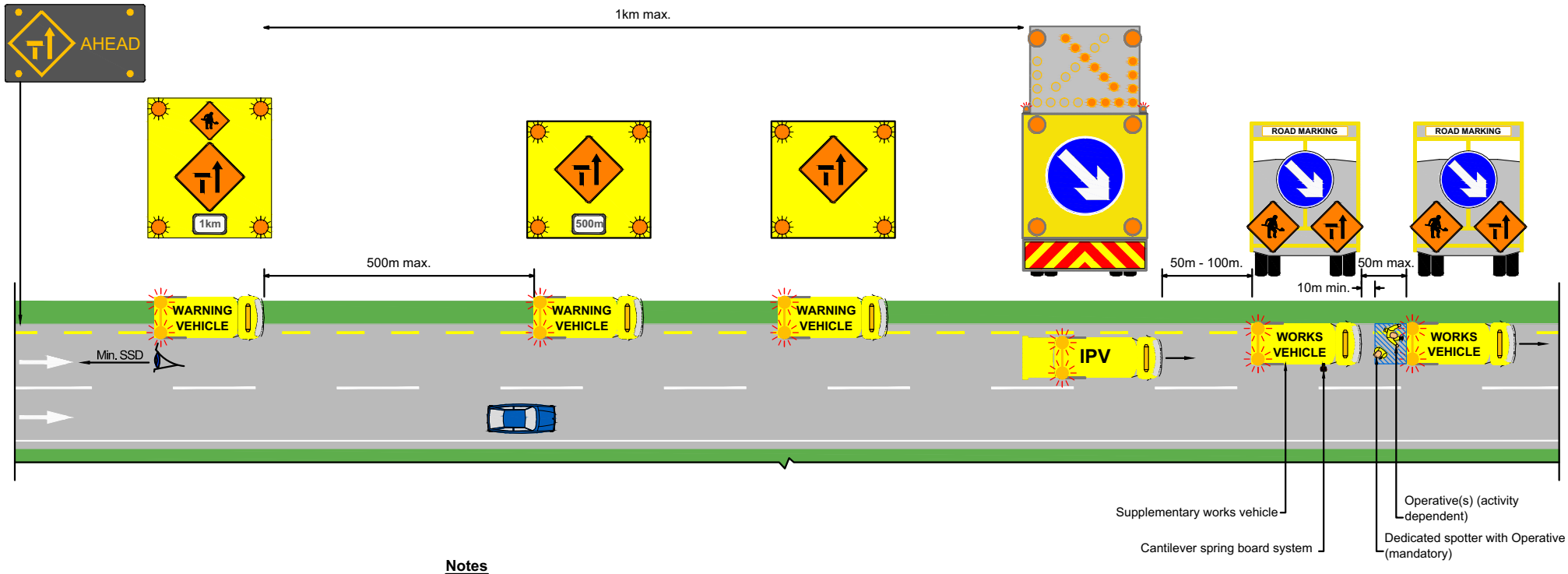
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



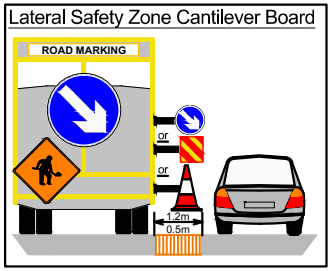
Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. This layout may be applicable for a 2 + 1 scenario but a detour may be required for the non-overtaking sections.
6. Advanced warning is required for side road approaches.

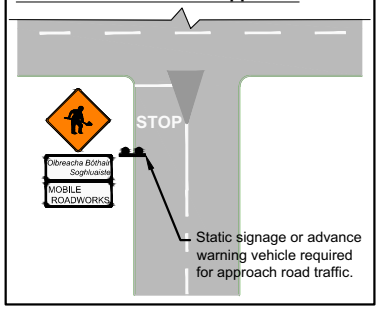
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Hard Shoulder Line/Bus Lane Line (Lane 1 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2-Lane (Off-Peak Only) - No H/S

RM26

RM26

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

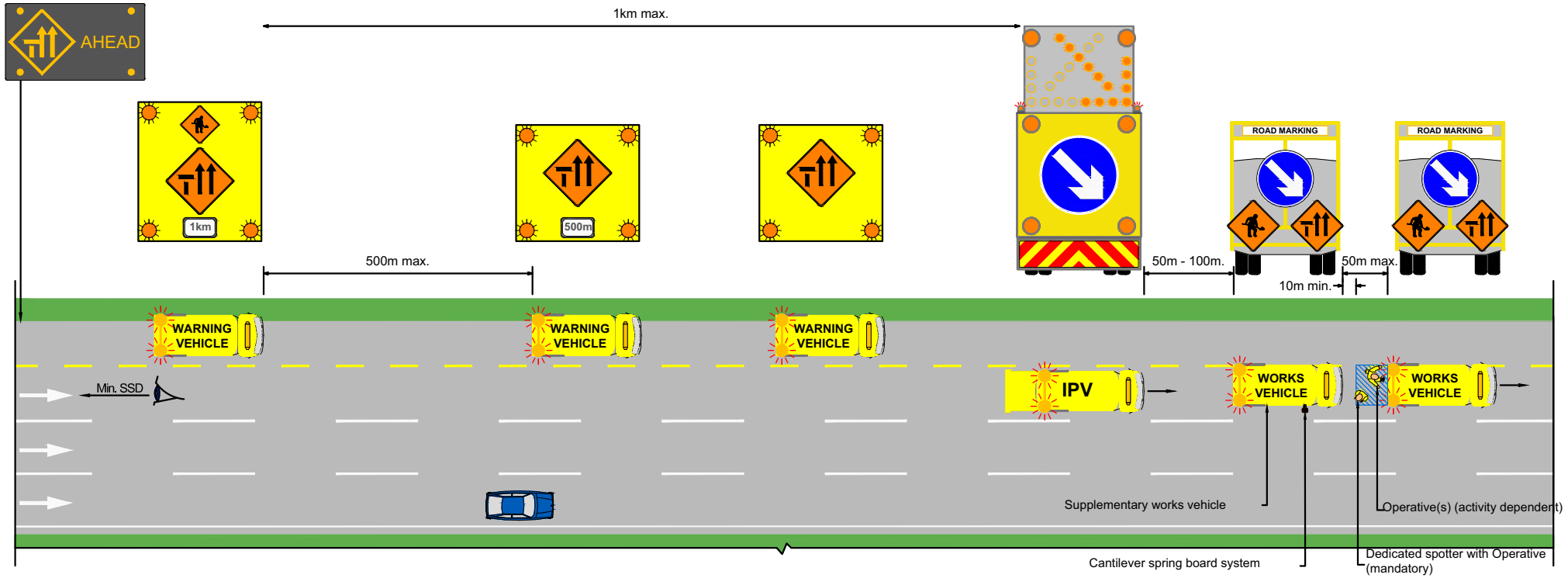
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

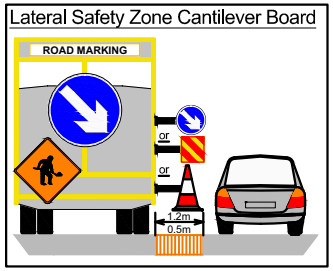
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

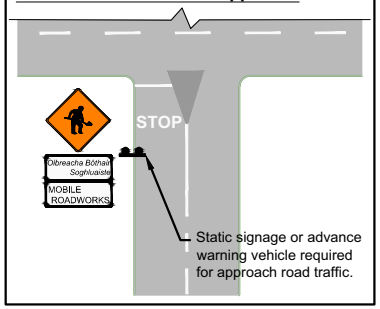
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Hard Shoulder Line/Bus Lane Line (Lane 1 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
3-Lane (Off-Peak Only)

RM27

RM27

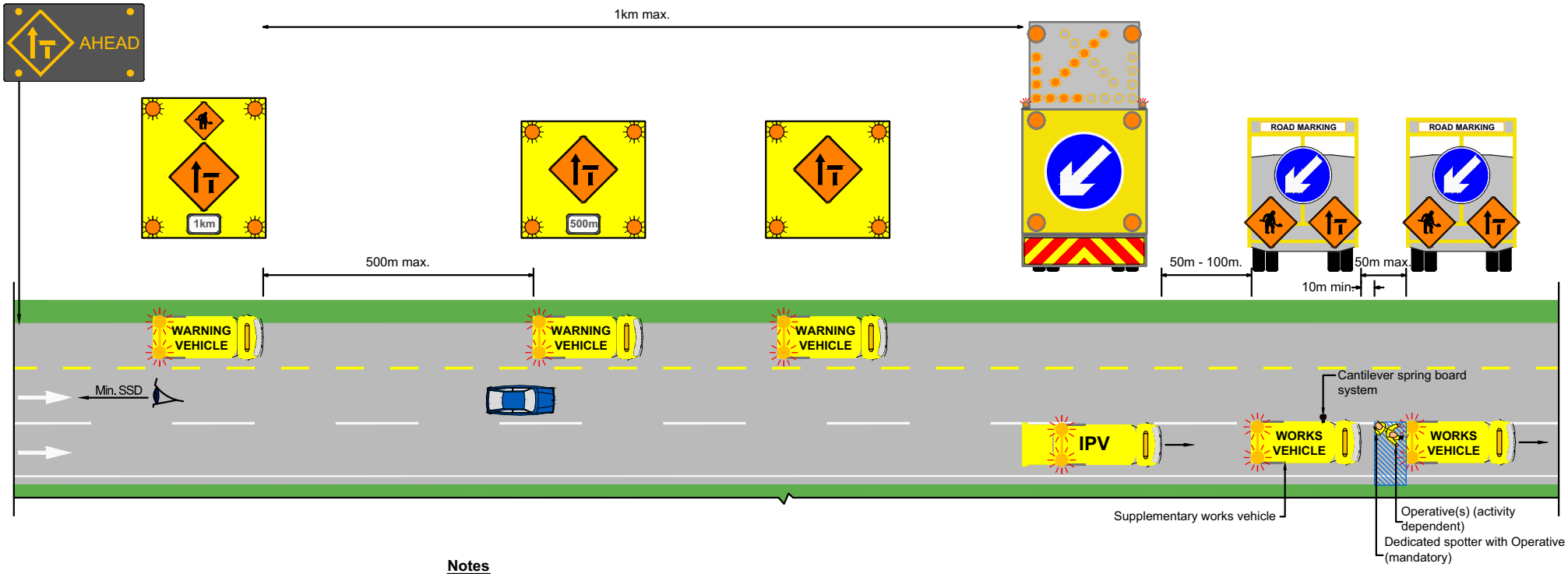
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



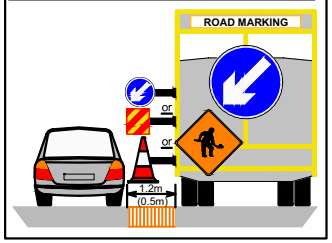
Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. This layout may be applicable for a 2 + 1 scenario but a detour may be required for the non-overtaking sections.
6. Advanced warning is required for side road approaches.

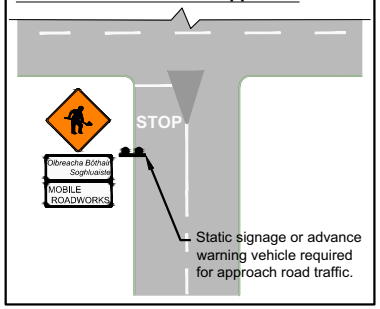
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Centre Line/Median Line (Lane 2 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2-Lane (Off-Peak Only)

RM28

RM28

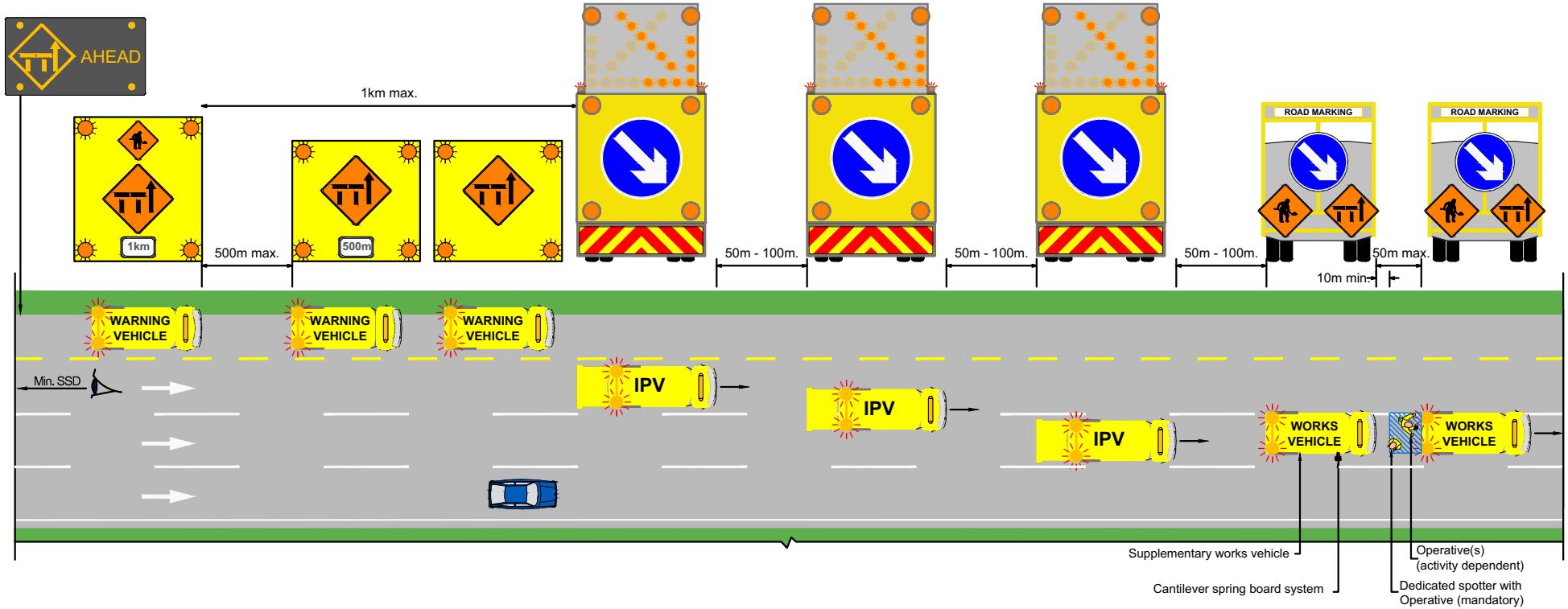
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

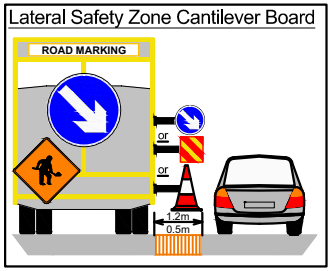
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

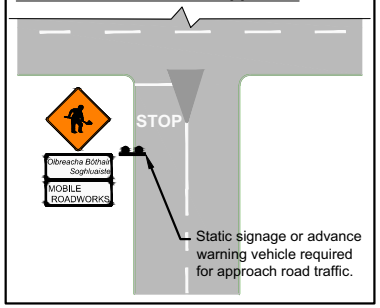
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Lane 1/2 - Lane Line (Lane 1 & 2 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
3-Lane (Off-Peak Only)

RM29

RM29

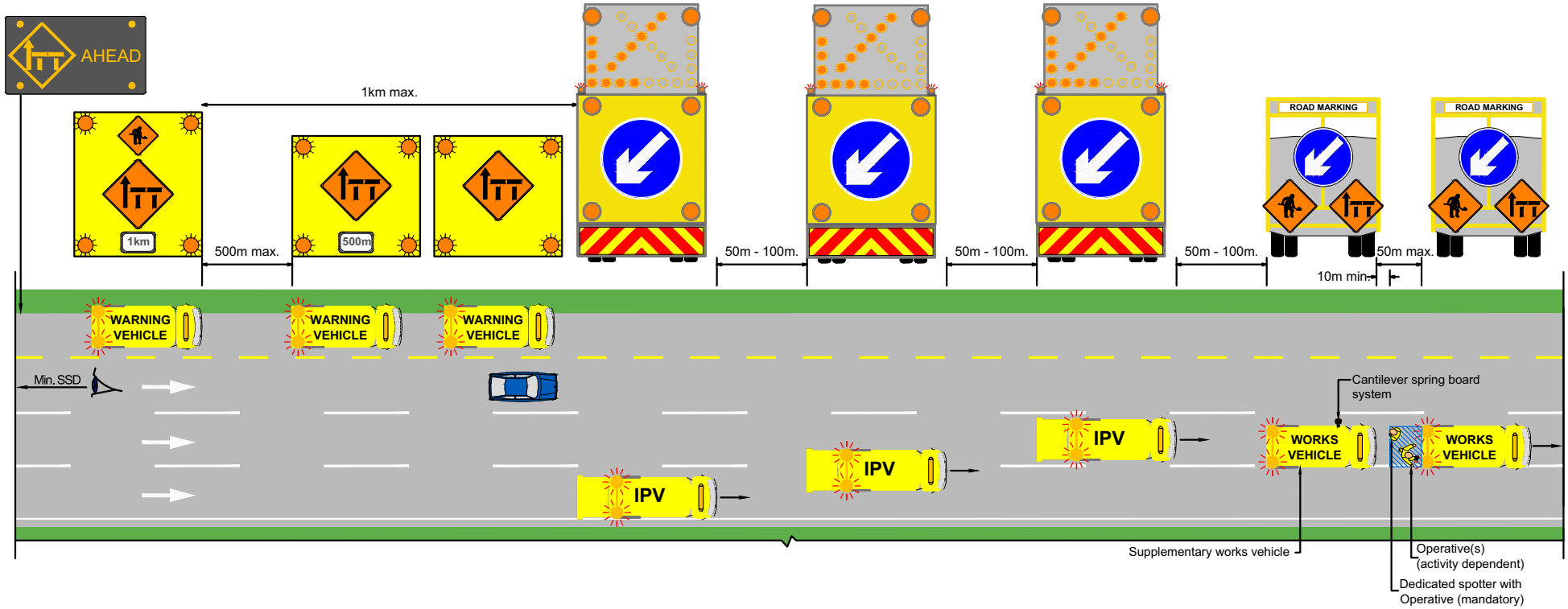
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

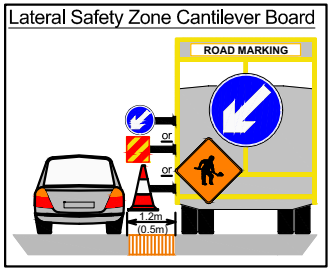
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

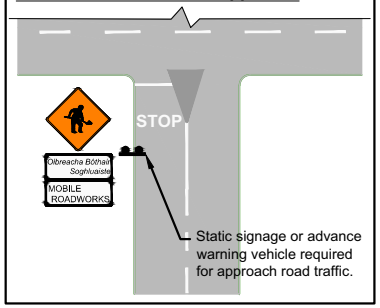
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Lane 2/3 - Lane Line (Lane 2 & 3 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
3-Lane (Off-Peak Only)

RM30

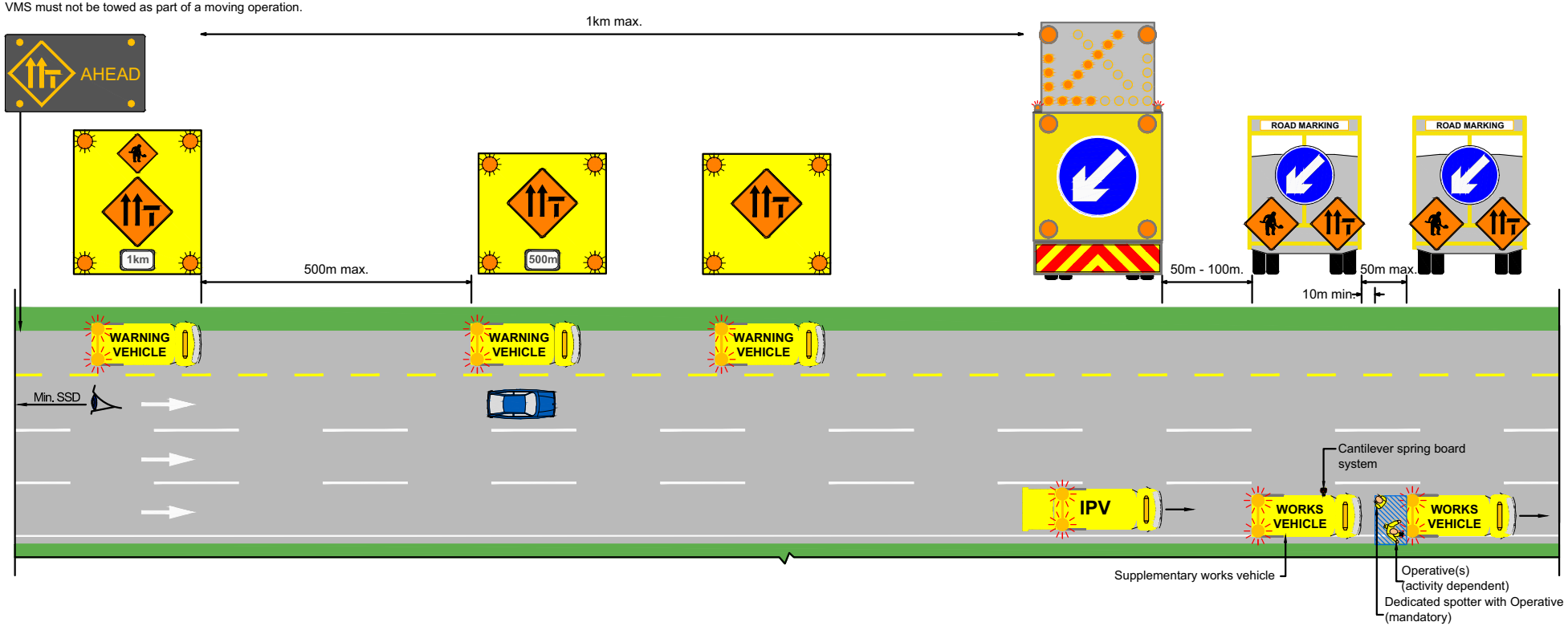
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

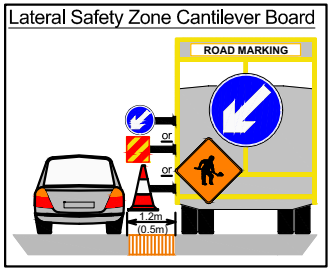
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

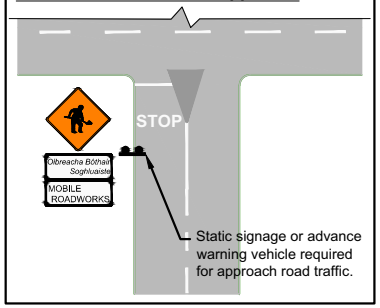
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes.
5. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Median Line (Lane 3 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
3-Lane (Off-Peak Only)

RM31

RM31

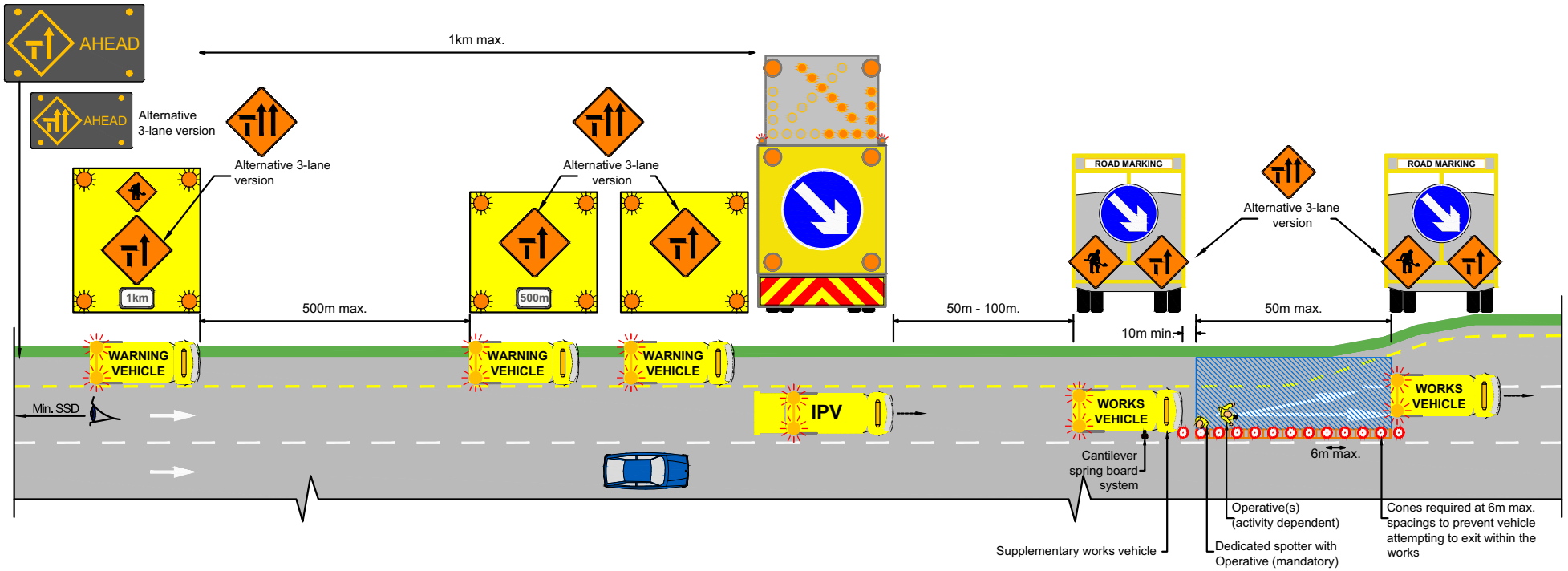
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

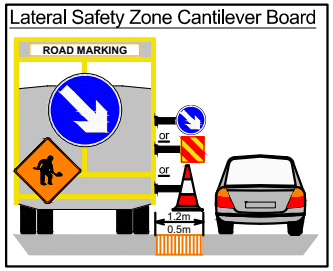
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

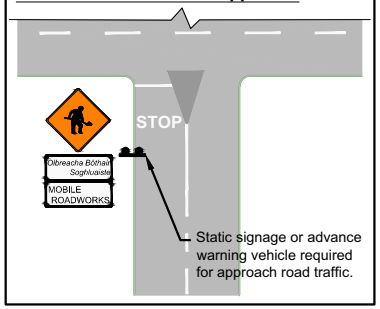
Lateral Safety Zone Cantilever Board



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes, refer to layouts RM44 and RM45 for longer operations under static setup.
5. Advanced warning is required for side road approaches.

Urban Dual - Side Road Approach



Legend

- Cones (1.0m min)
- Spotter
- Operative
- Traffic Sign
- Lateral Safety Zone
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Bifurcation Arrows (Lane 1 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2 & 3-Lane (Off-Peak Only)

RM32

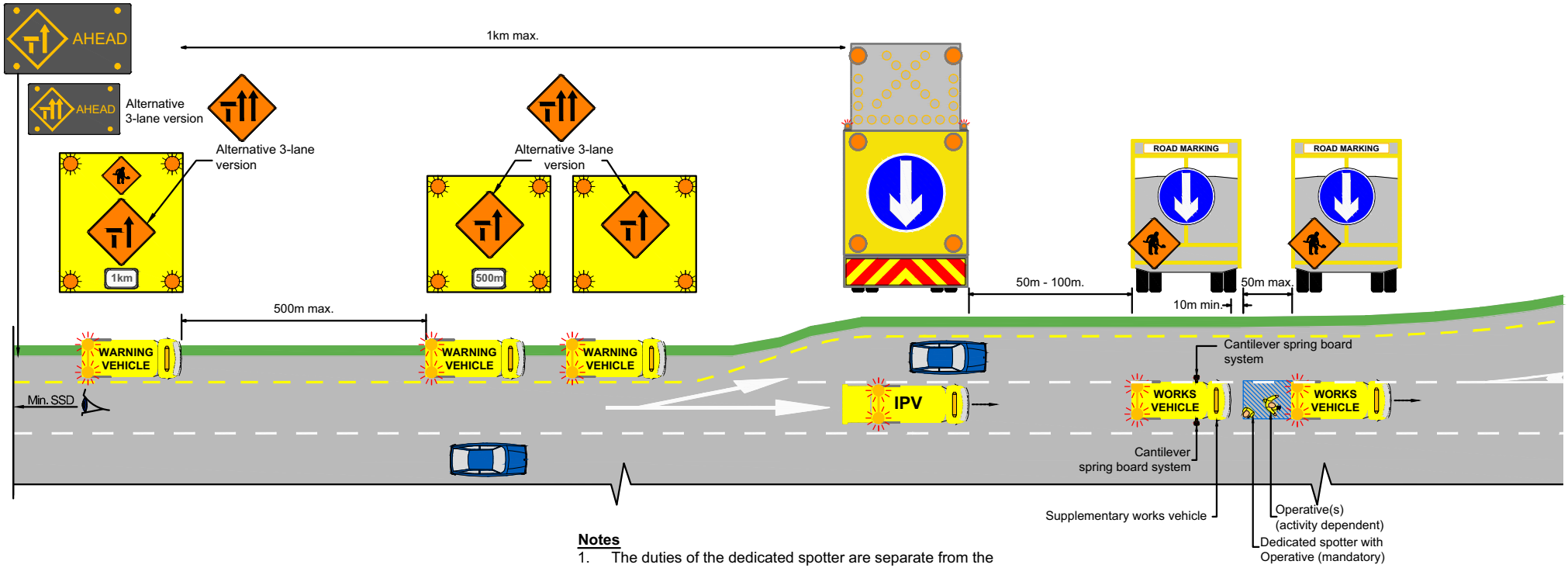
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



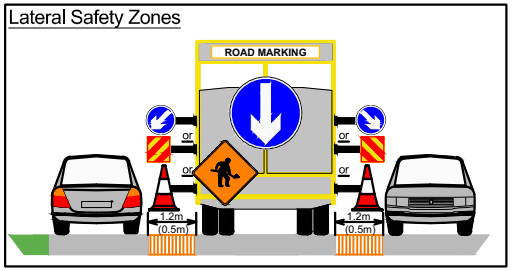
Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes, refer to layouts RM44 and RM45 for longer operations under static setup.
5. Advanced warning is required for side road approaches.

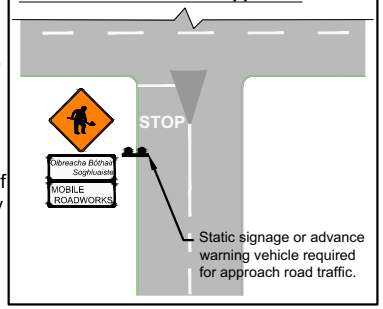
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zones



Urban Dual - Side Road Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Diverge Lane Line (Lane 1 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2 & 3-Lane (Off-Peak Only)

RM33

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

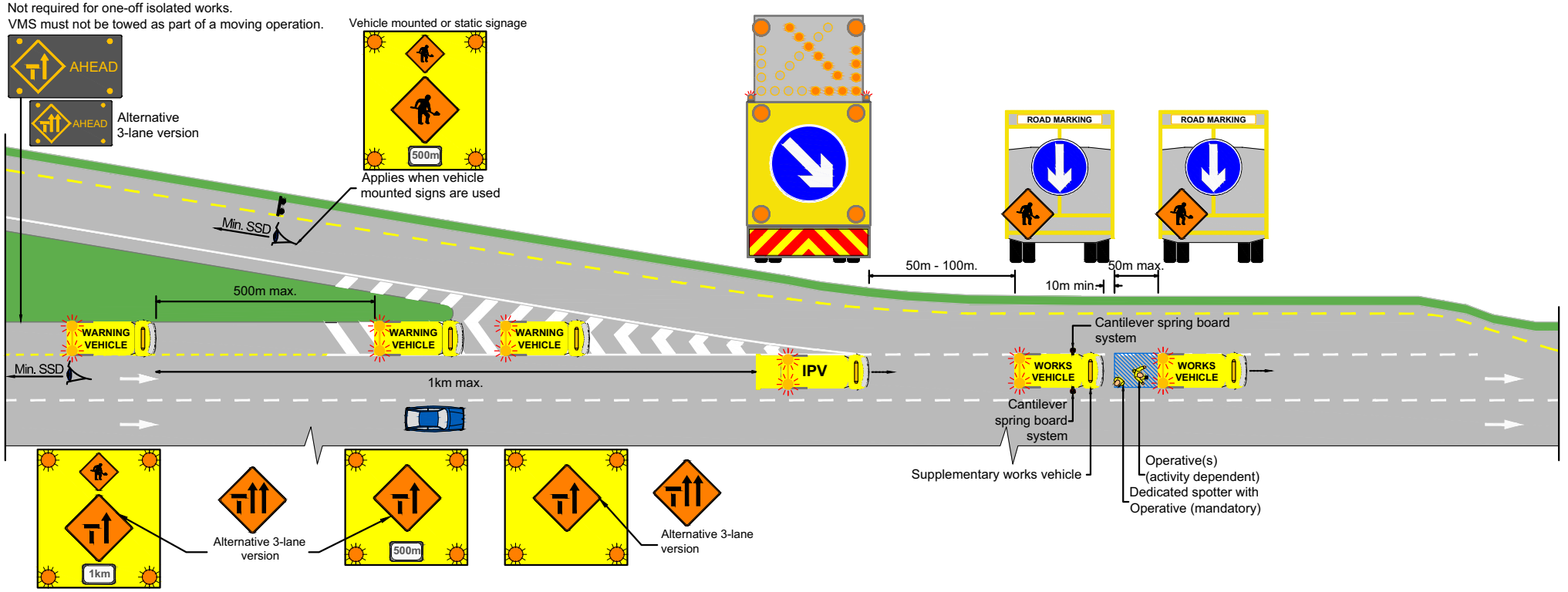
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



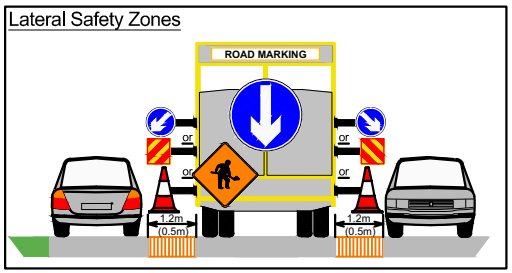
Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
4. Maximum stop permitted is 15 minutes, refer to layouts RM44 and RM45 for longer operations under static setup.
5. Advanced warning is required for side road approaches.

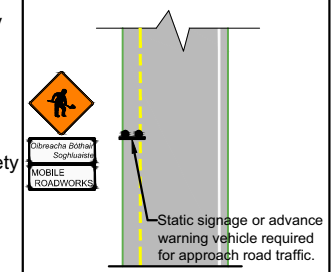
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zones



Merge Lane Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Merge Lane Line (Lane 1 Closure)

Mobile

Dual C/W & Motorway (All Speeds)
2 & 3-Lane (Off-Peak Only)

RM34

RM34

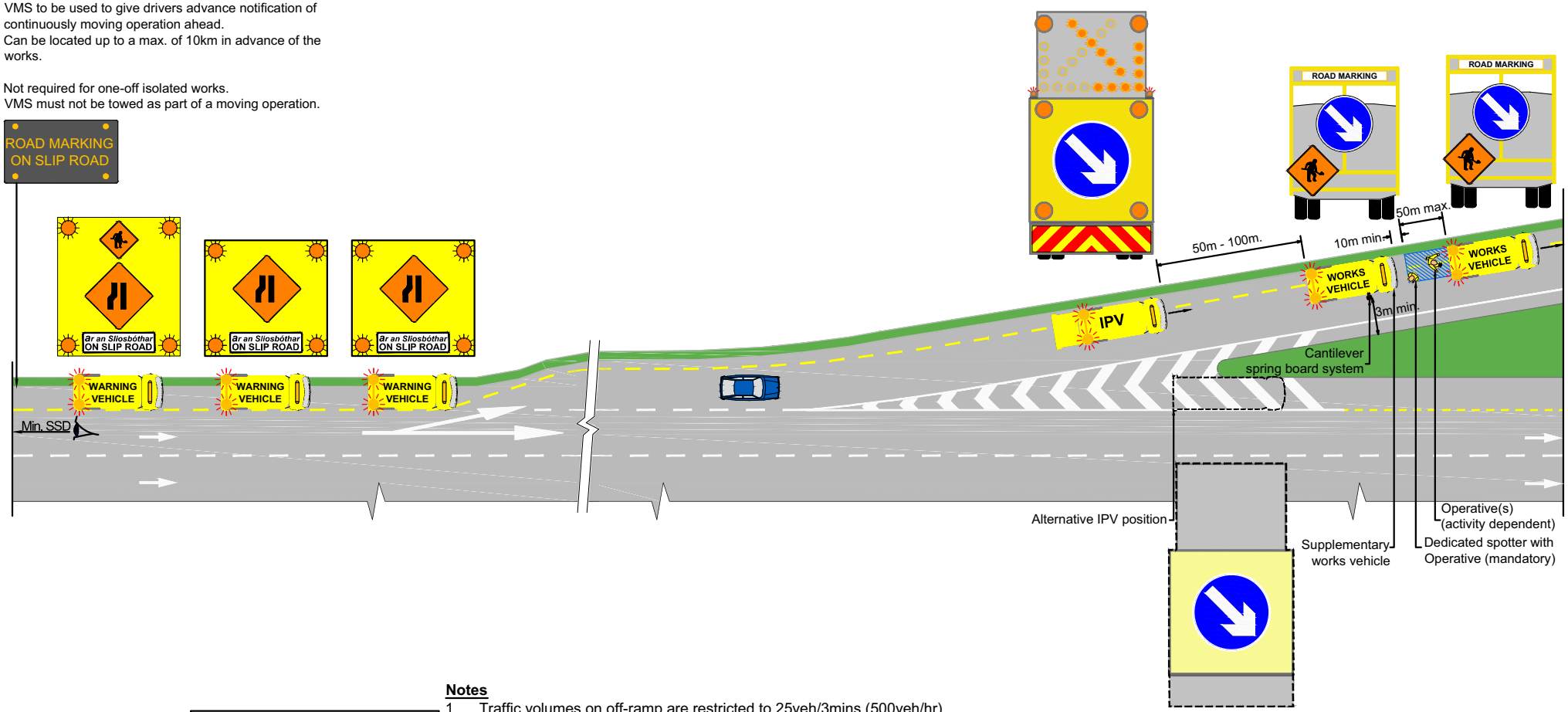
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

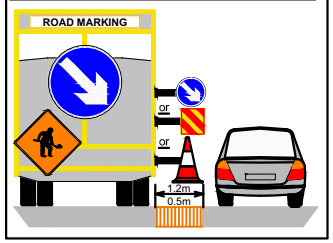
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
5. Maximum stop permitted is 15 minutes, refer to layout RM50 for longer operations under static setup.
6. Advanced warning is required for side road approaches.
7. If 3m min. lane width is not available adjacent to the works on the off-ramp, then consideration must be given to using a convoy operation.

Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Off-Ramp - Left Line

Mobile

Dual C/W & Motorway (All Speeds)
2 & 3-Lane (Off-Peak Only)

RM35

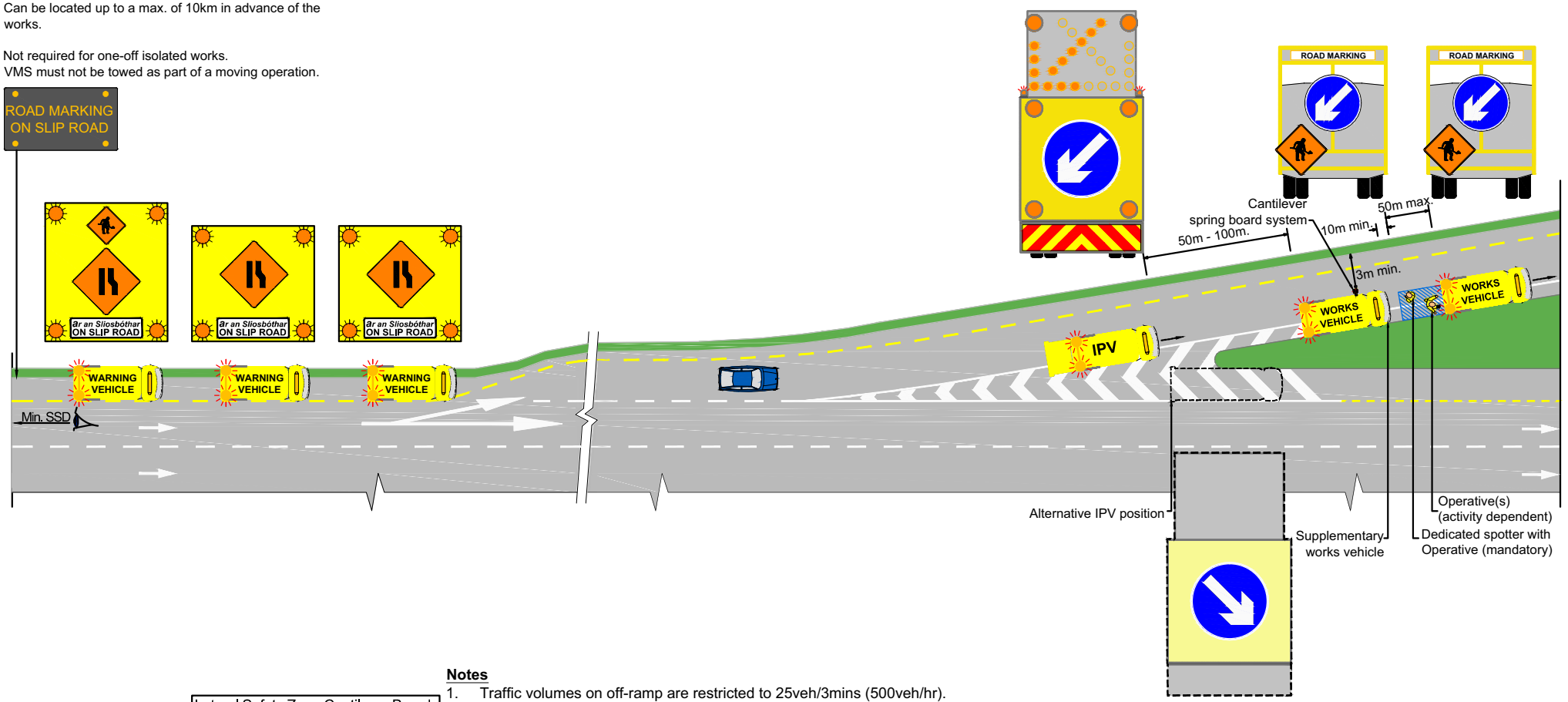
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

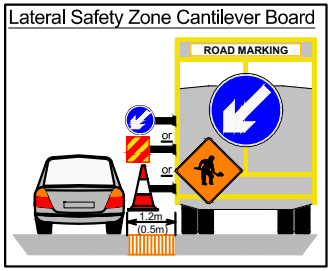
Not required for one-off isolated works.
VMS must not be towed as part of a moving operation.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
5. Maximum stop permitted is 15 minutes, refer to layout RM51 for longer operations under static setup.
6. Advanced warning is required for side road approaches.
7. If 3m min. lane width is not available adjacent to the works on the off-ramp, then consideration must be given to using a convoy operation.

Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)
Off-Ramp - Right Line

Mobile

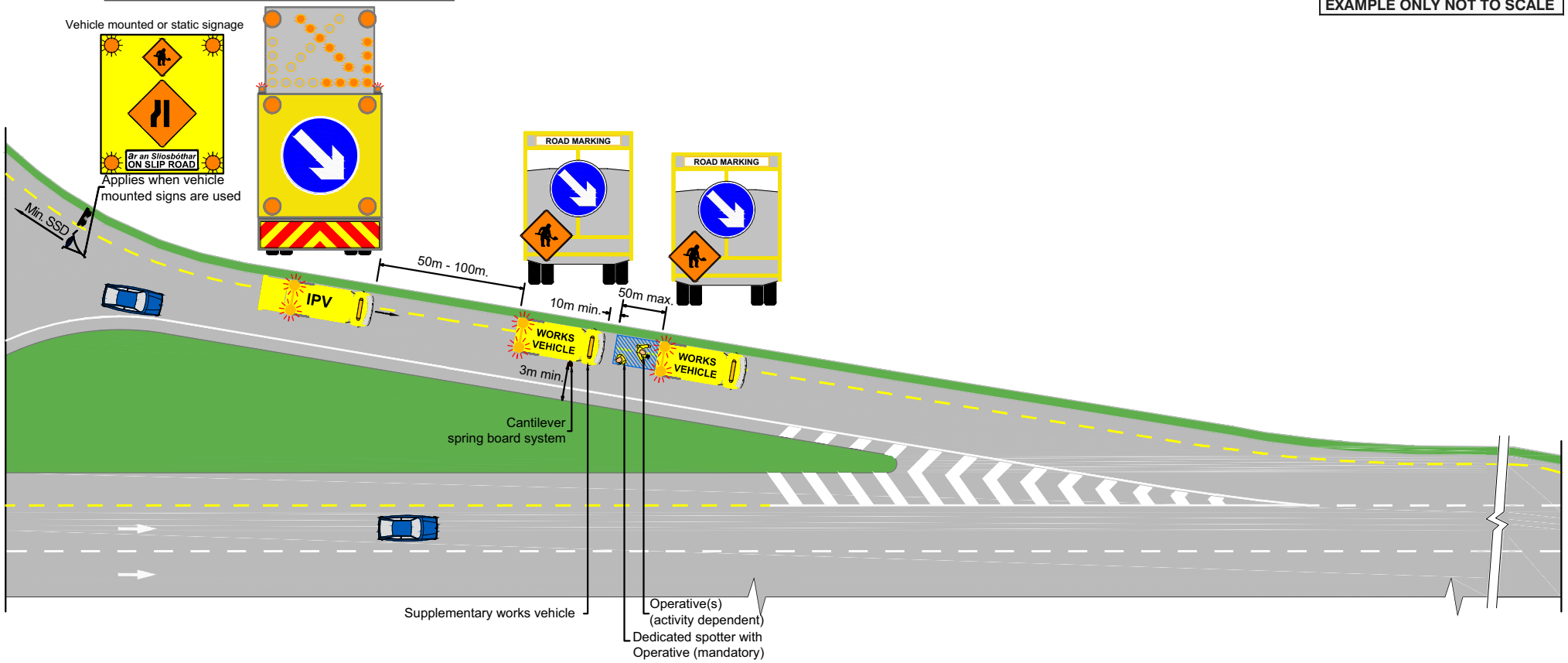
Dual C/W & Motorway (All Speeds)
2 & 3-Lane (Off-Peak Only)

RM36

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



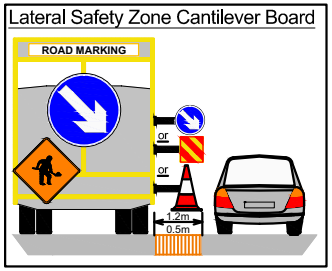
Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
5. Maximum stop permitted is 15 minutes.
6. Advanced warning is required for side road approaches.
7. If 3m min. lane width is not available adjacent to the works on the off-ramp, then consideration must be given to using a convoy operation.

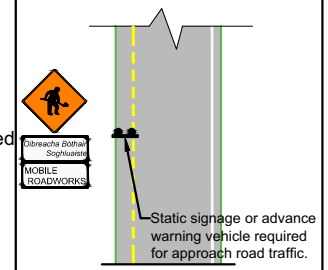
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Merge Lane Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

On-Ramp - Left Line

Mobile

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

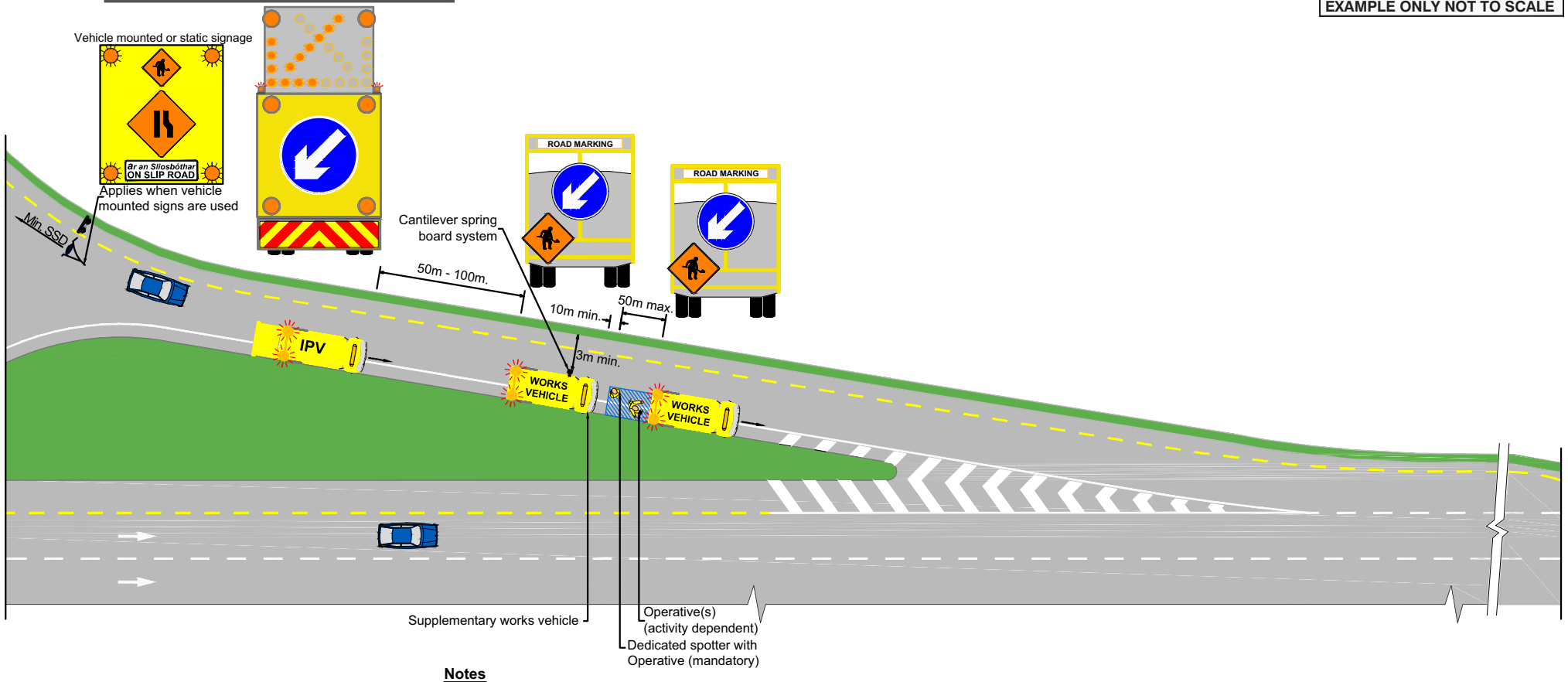
RM37

RM37

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



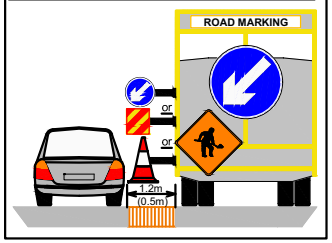
Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
5. Maximum stop permitted is 15 minutes.
6. Advanced warning is required for side road approaches.
7. If 3m min. lane width is not available adjacent to the works on the off-ramp, then consideration must be given to using a convoy operation.

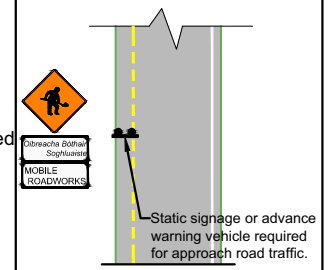
SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Merge Lane Approach



Legend

- Spotter
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Fitting/Removal, Longitudinal Markings (Incl. Short Duration Screed)

On-Ramp - Right Line

Mobile

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM38

RM38

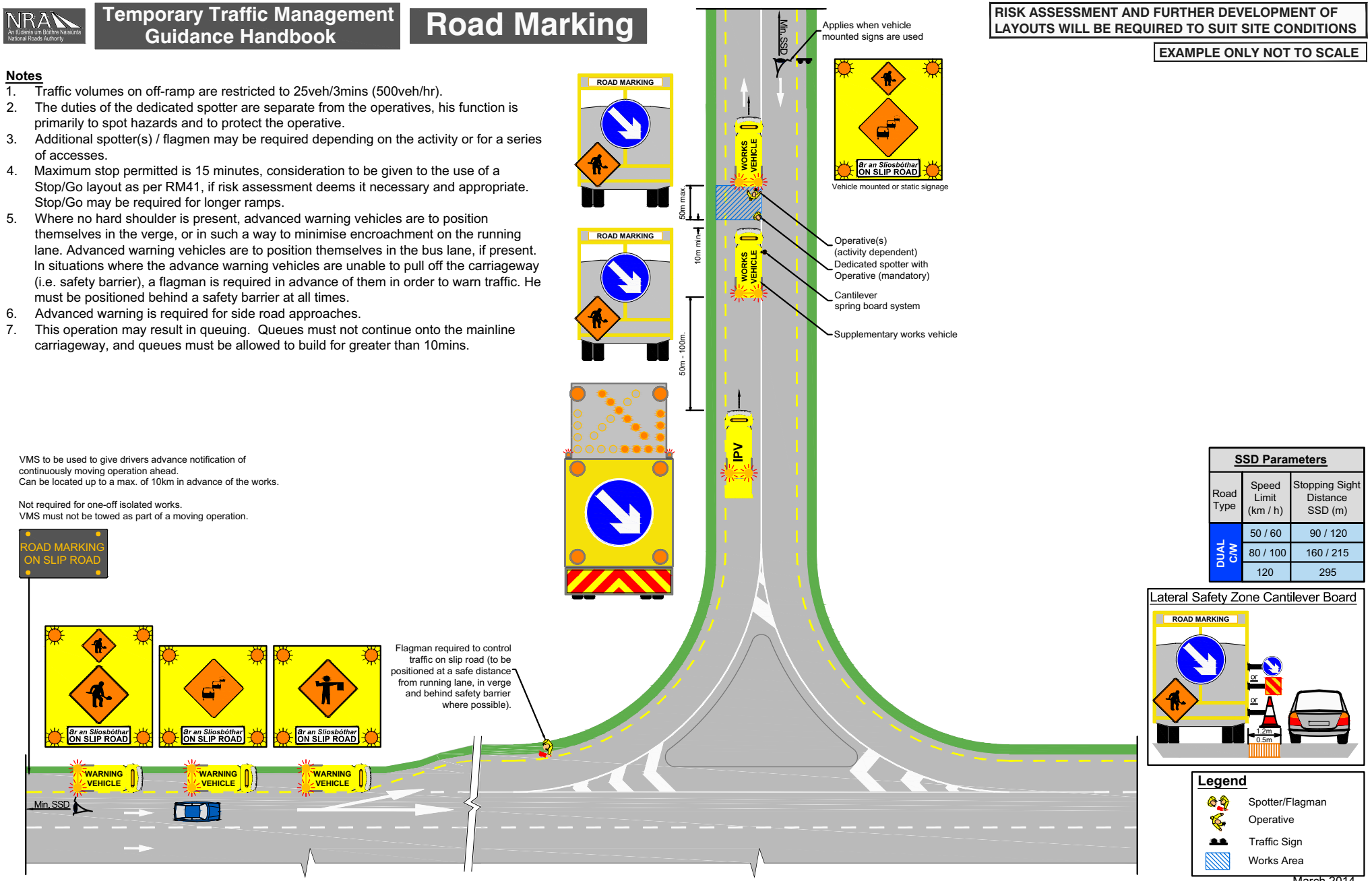
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Maximum stop permitted is 15 minutes, consideration to be given to the use of a Stop/Go layout as per RM41, if risk assessment deems it necessary and appropriate. Stop/Go may be required for longer ramps.
5. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
6. Advanced warning is required for side road approaches.
7. This operation may result in queuing. Queues must not continue onto the mainline carriageway, and queues must be allowed to build for greater than 10mins.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board

Legend

- Spotter/Flagman
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Inserts, Bollards, Longitudinal Markings (Incl. Short Duration Screed)

Compact Slip - Off-Slip Edge Line/Centre Line

Mobile

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM39

RM39

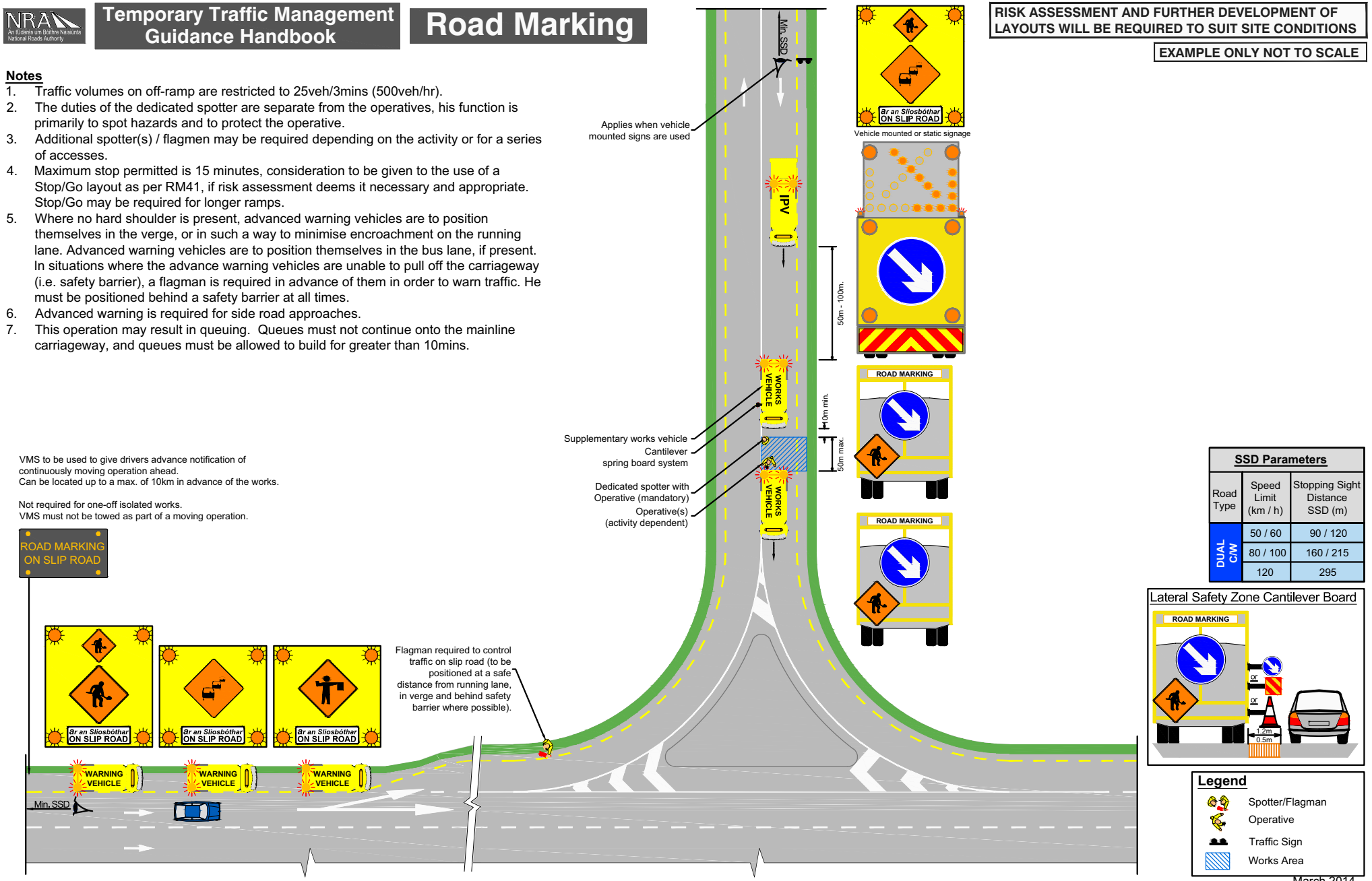
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
3. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
4. Maximum stop permitted is 15 minutes, consideration to be given to the use of a Stop/Go layout as per RM41, if risk assessment deems it necessary and appropriate. Stop/Go may be required for longer ramps.
5. Where no hard shoulder is present, advanced warning vehicles are to position themselves in the verge, or in such a way to minimise encroachment on the running lane. Advanced warning vehicles are to position themselves in the bus lane, if present. In situations where the advance warning vehicles are unable to pull off the carriageway (i.e. safety barrier), a flagman is required in advance of them in order to warn traffic. He must be positioned behind a safety barrier at all times.
6. Advanced warning is required for side road approaches.
7. This operation may result in queuing. Queues must not continue onto the mainline carriageway, and queues must be allowed to build for greater than 10mins.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board

Legend

- Spotter/Flagman
- Operative
- Traffic Sign
- Works Area

March 2014

Stud Inserts, Bollards, Longitudinal Markings (Incl. Short Duration Screed)

Compact Slip - On-Slip Edge Line/Centre Line

Mobile

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM40

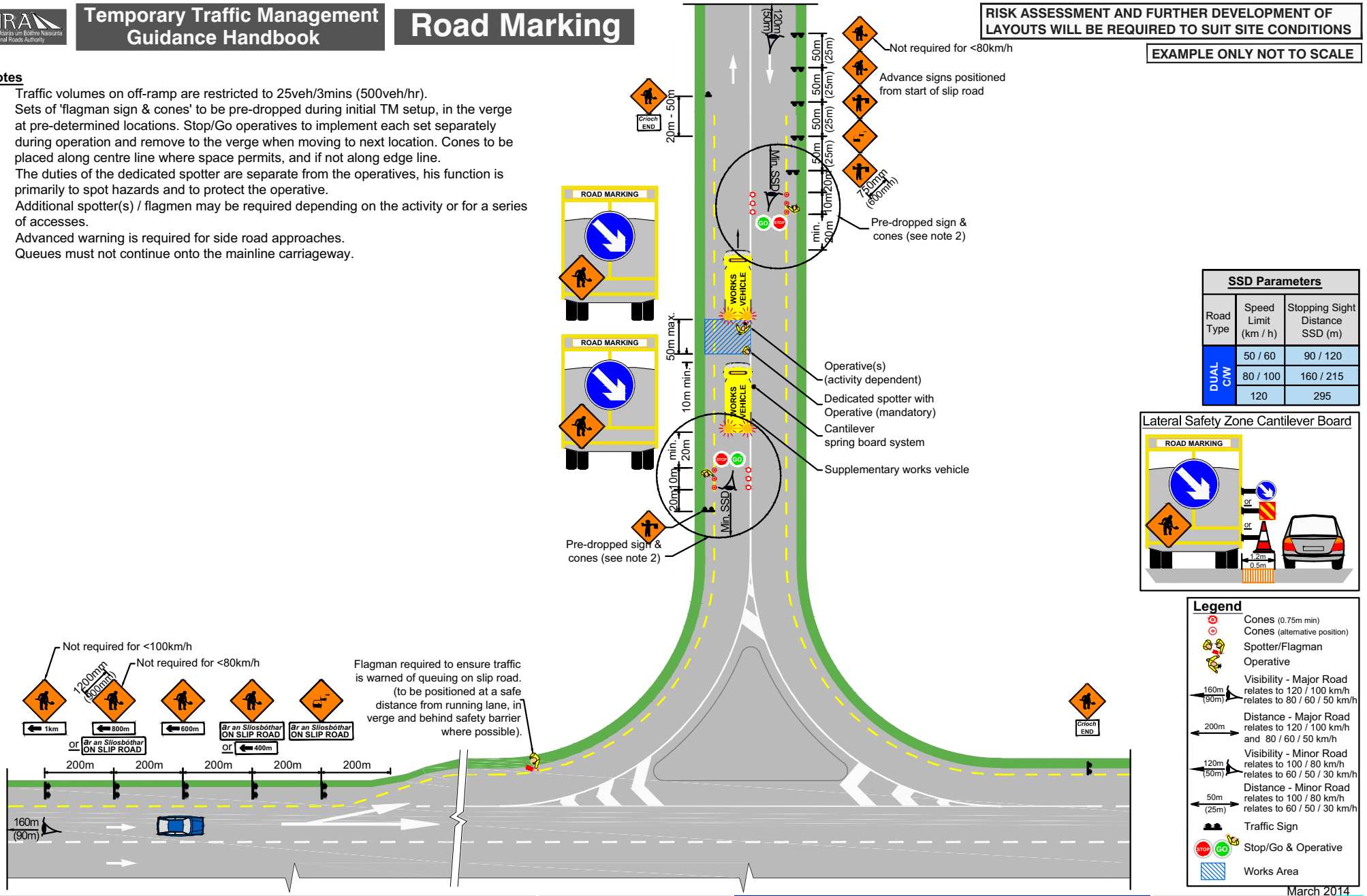
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

Notes

1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along edge line.
3. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
4. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
5. Advanced warning is required for side road approaches.
6. Queues must not continue onto the mainline carriageway.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board

Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter/Flagman
- Operative
- Visibility - Major Road: relates to 120 / 100 km/h; relates to 80 / 60 / 50 km/h (160m (90m))
- Distance - Major Road: relates to 120 / 100 km/h and 80 / 60 / 50 km/h (200m)
- Visibility - Minor Road: relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h (120m (50m))
- Distance - Minor Road: relates to 100 / 80 km/h; relates to 60 / 50 / 30 km/h (50m (25m))
- Traffic Sign
- Stop/Go & Operative
- Works Area

March 2014

Studs, Longitudinal & Screed Applied Markings

Compact Slip (Stop/Go on Exit)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM41

RM41

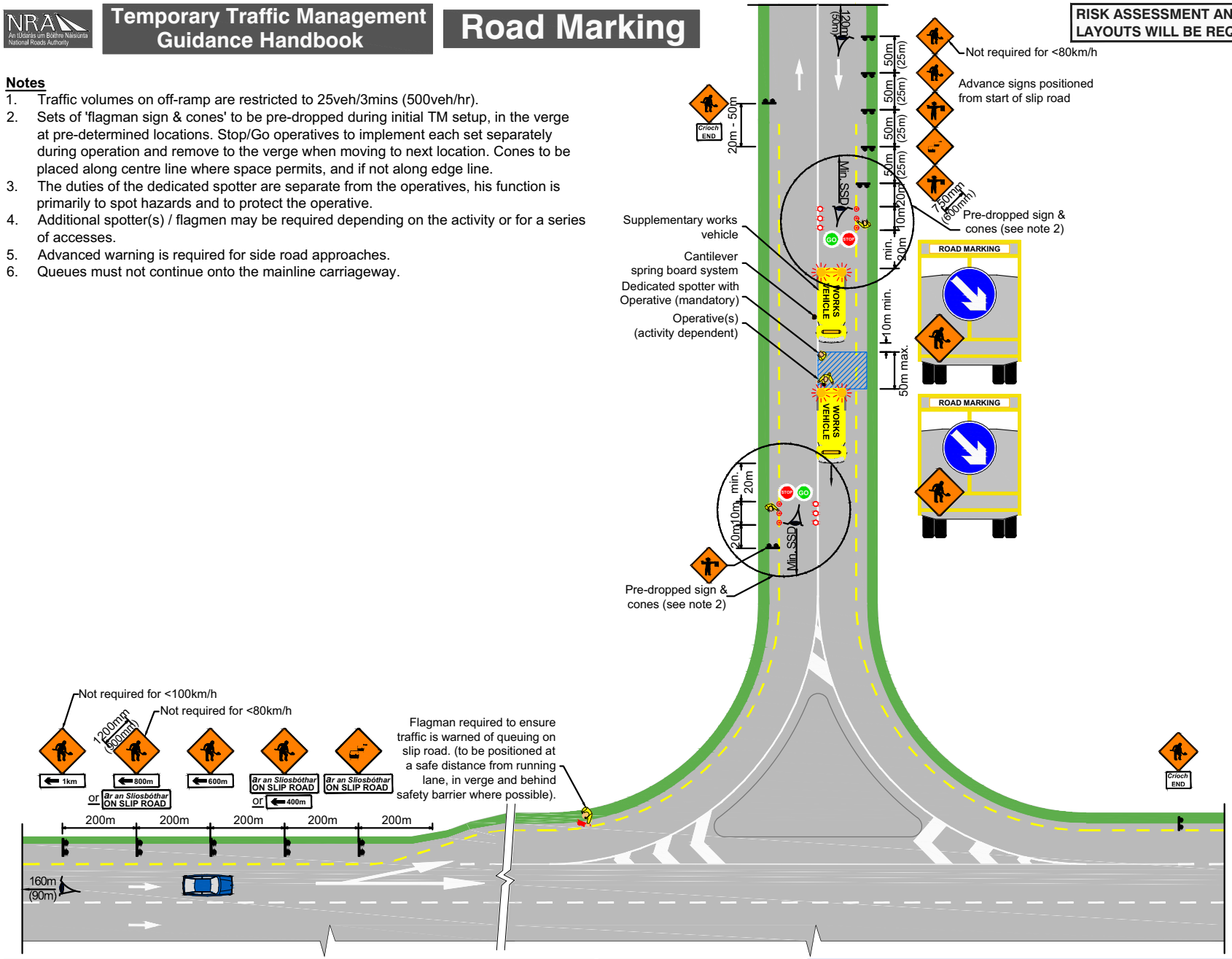
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

Notes

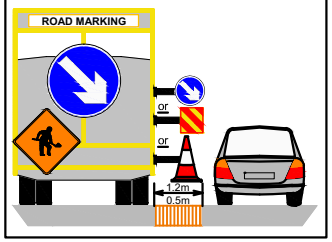
1. Traffic volumes on off-ramp are restricted to 25veh/3mins (500veh/hr).
2. Sets of 'flagman sign & cones' to be pre-dropped during initial TM setup, in the verge at pre-determined locations. Stop/Go operatives to implement each set separately during operation and remove to the verge when moving to next location. Cones to be placed along centre line where space permits, and if not along edge line.
3. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
4. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
5. Advanced warning is required for side road approaches.
6. Queues must not continue onto the mainline carriageway.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Lateral Safety Zone Cantilever Board



Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter/Flagman
- Operative
- Visibility - Major Road relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h (160m (90m))
- Distance - Major Road relates to 120 / 100 km/h and 80 / 60 / 50 km/h (200m)
- Visibility - Minor Road relates to 100 / 80 km/h relates to 60 / 50 / 30 km/h (120m (50m))
- Distance - Minor Road relates to 100 / 80 km/h relates to 60 / 50 / 30 km/h (50m (25m))
- Traffic Sign
- Stop/Go & Operative
- Works Area

March 2014

Studs, Longitudinal & Screed Applied Markings

Compact Slip (Stop/Go on Approach)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM42

RM42

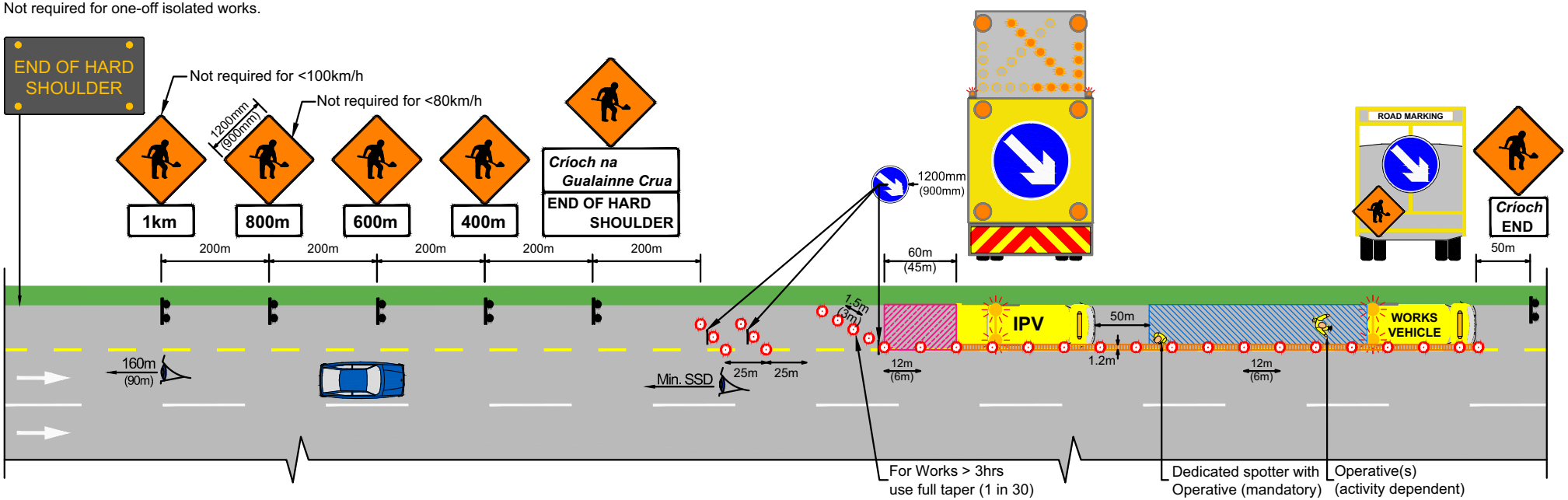
Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

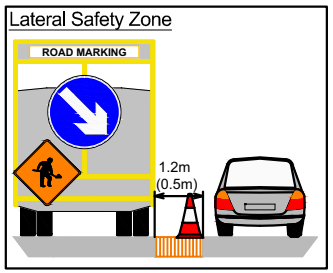
VMS to be used to give drivers advance notification of continuously moving operation ahead.

Not required for one-off isolated works.



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295



Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.
3. Advanced warning is required for side road approaches.

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility 160m (90m) relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance 12m (6m) relates to 120 / 100 / 80 km/h relates to 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone / Lateral Safety Zone
- Works Area

March 2014

Screed Applied Markings

Mainline Carriageway (Hard Shoulder Closure)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane - With H/S

RM43

RM43

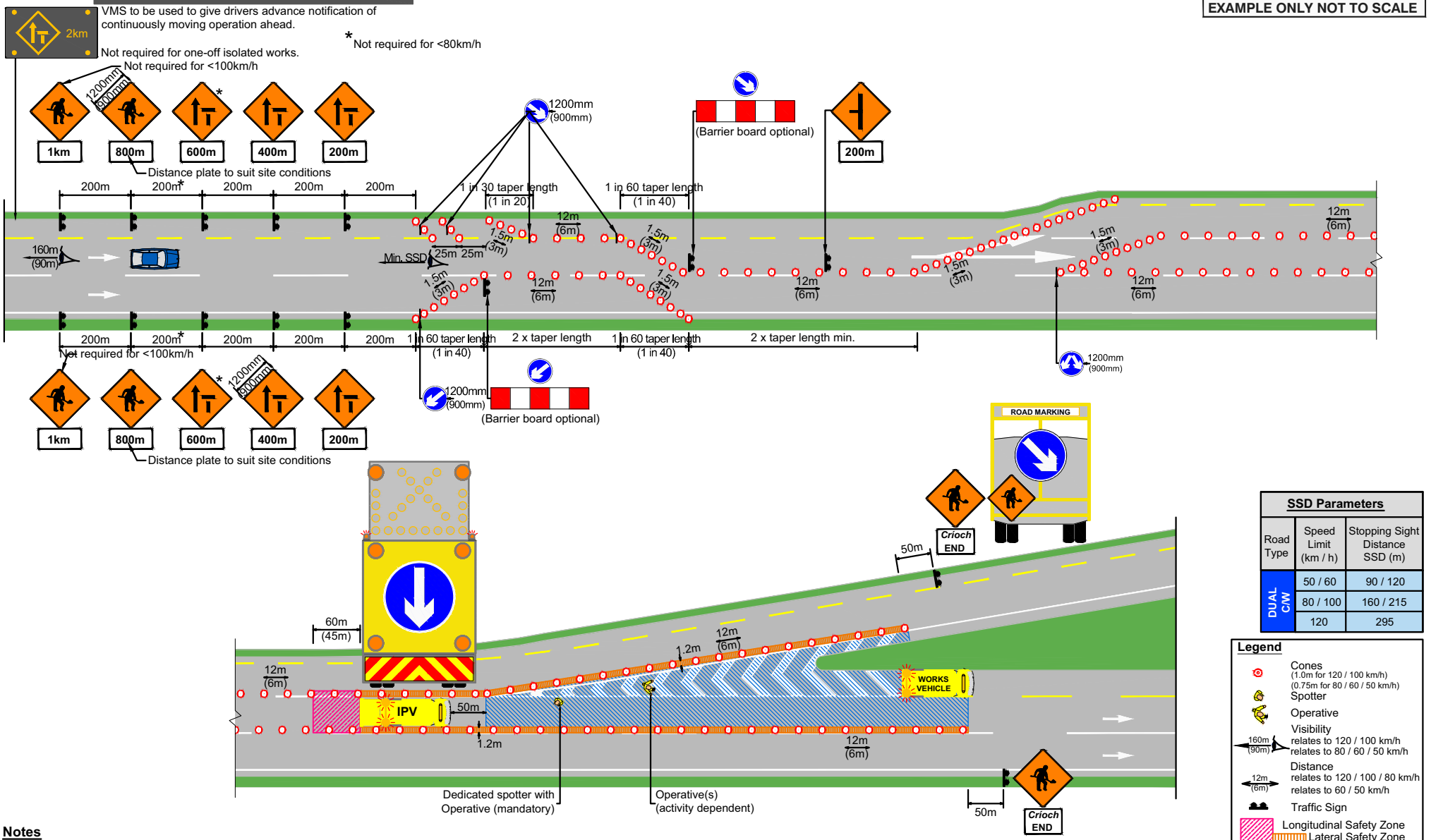
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance relates to 120 / 100 / 80 km/h relates to 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone / Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. This setup may also be used for bifurcation arrows by extending the longitudinal safety zone in advance. Vehicles and plant to cross temporary slip road access only when it is safe to do so.

March 2014

Screed Applied Markings

Mainline Carriageway - Diverge Hatching

Static

Dual C/W & Motorway (All Speeds)

2-Lane (Off-Peak Only)

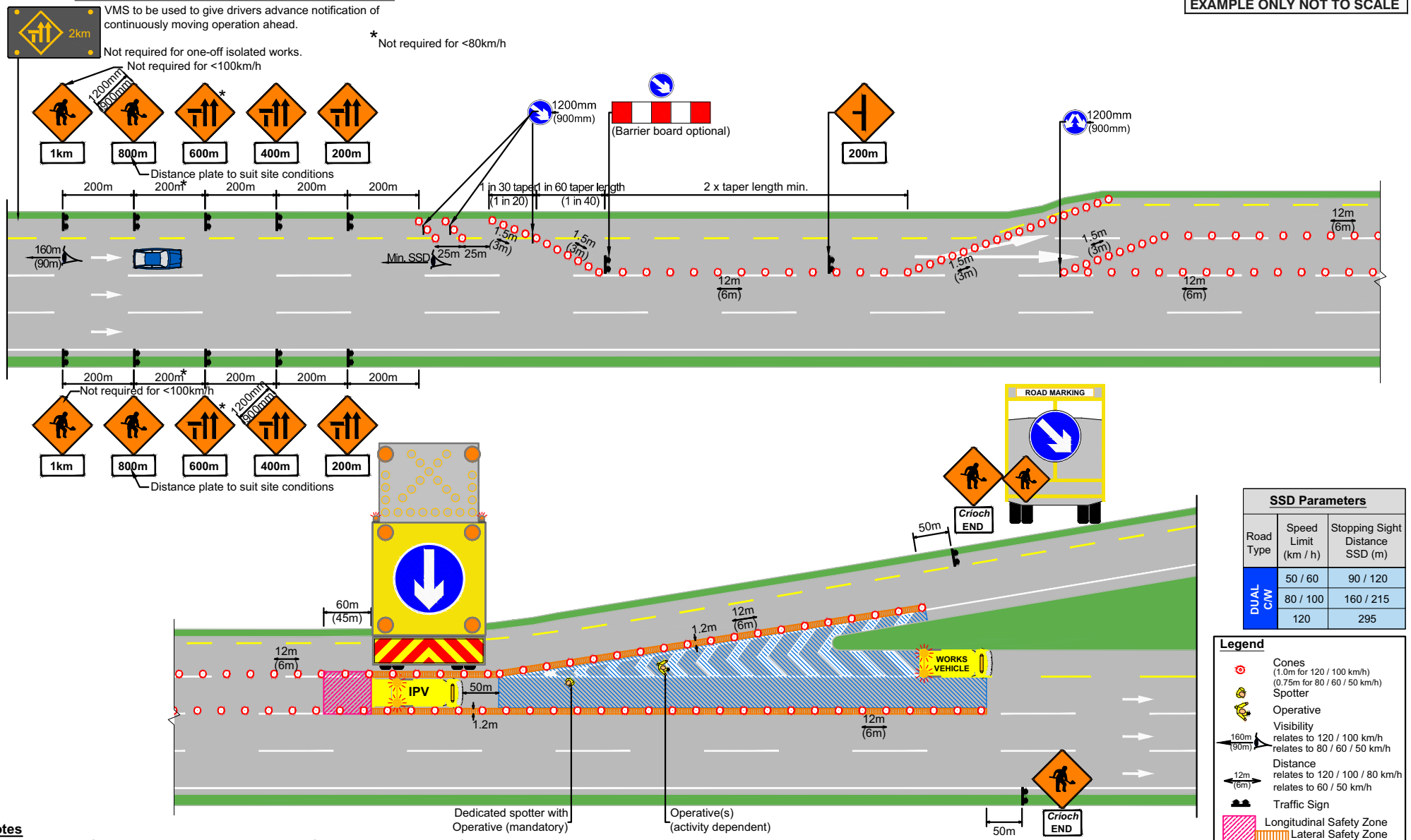
RM44

RM44

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance relates to 120 / 100 / 80 km/h relates to 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone / Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. This setup may also be used for bifurcation arrows by extending the longitudinal safety zone in advance. Vehicles and plant to cross temporary slip road access only when it is safe to do so.

March 2014

Screed Applied Markings

Mainline Carriageway - Diverge Hatching

Static

Dual C/W & Motorway (All Speeds)

3-Lane (Off-Peak Only)

RM45

RM45

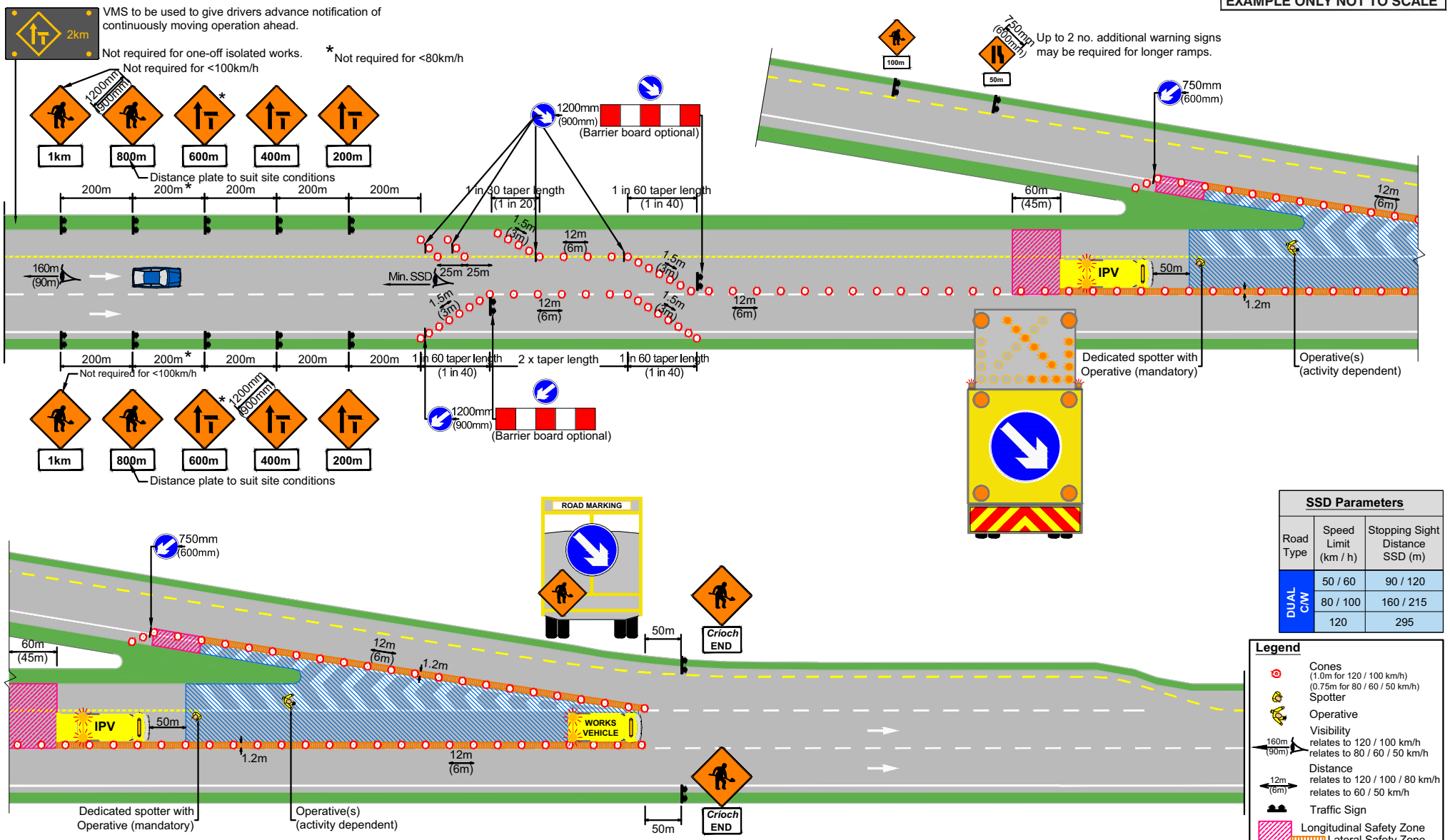
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance relates to 120 / 100 / 80 km/h relates to 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone
- Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.

March 2014

Screed Applied Markings

Mainline Carriageway - Merge Hatching

Static

Dual C/W & Motorway (All Speeds)

2-Lane (Off-Peak Only)

RM46

RM46

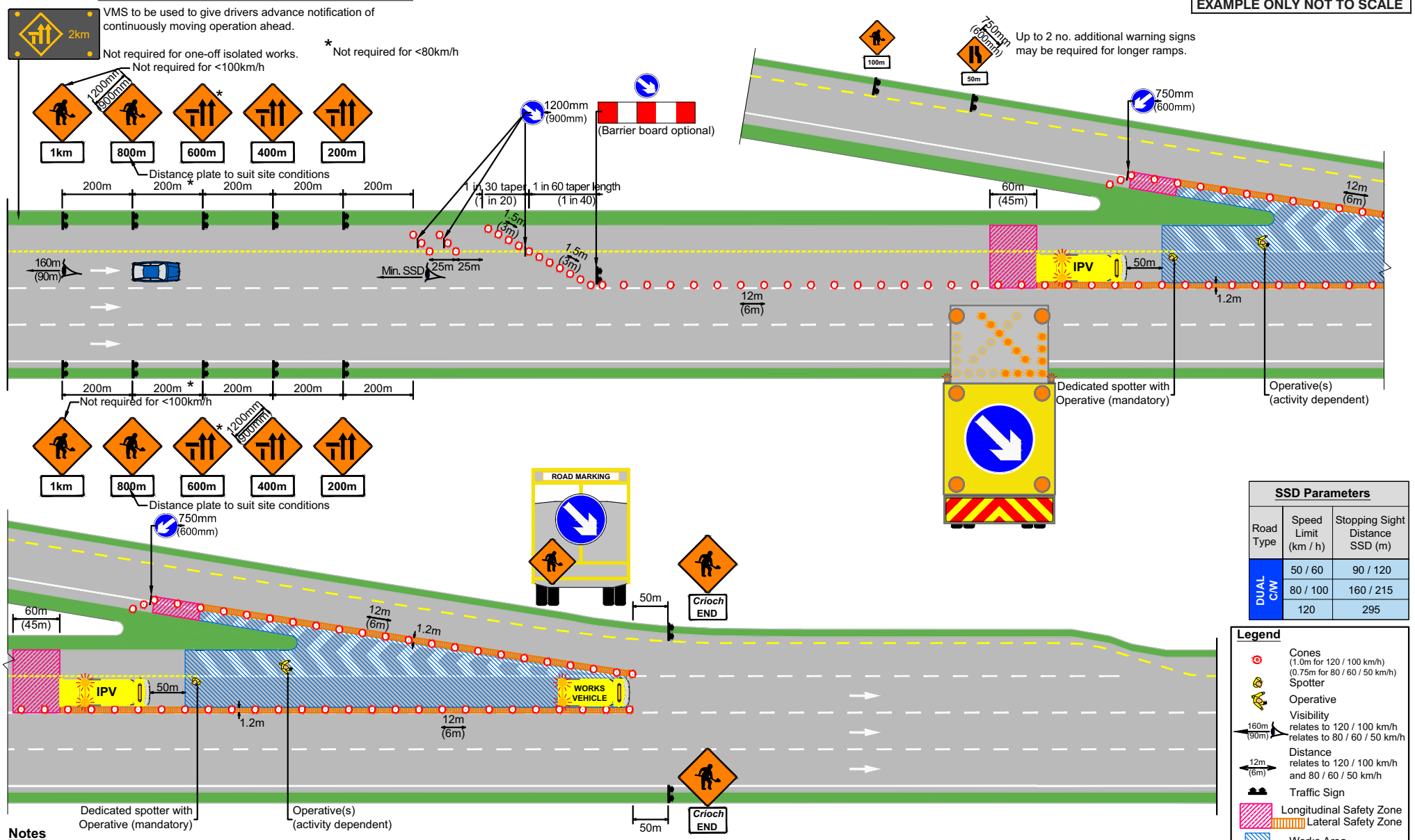
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance relates to 120 / 100 km/h and 80 / 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone
- Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.

March 2014

Screed Applied Markings

Mainline Carriageway - Merge Hatching

Static

Dual C/W & Motorway (All Speeds)

3-Lane (Off-Peak Only)

RM47

RM47

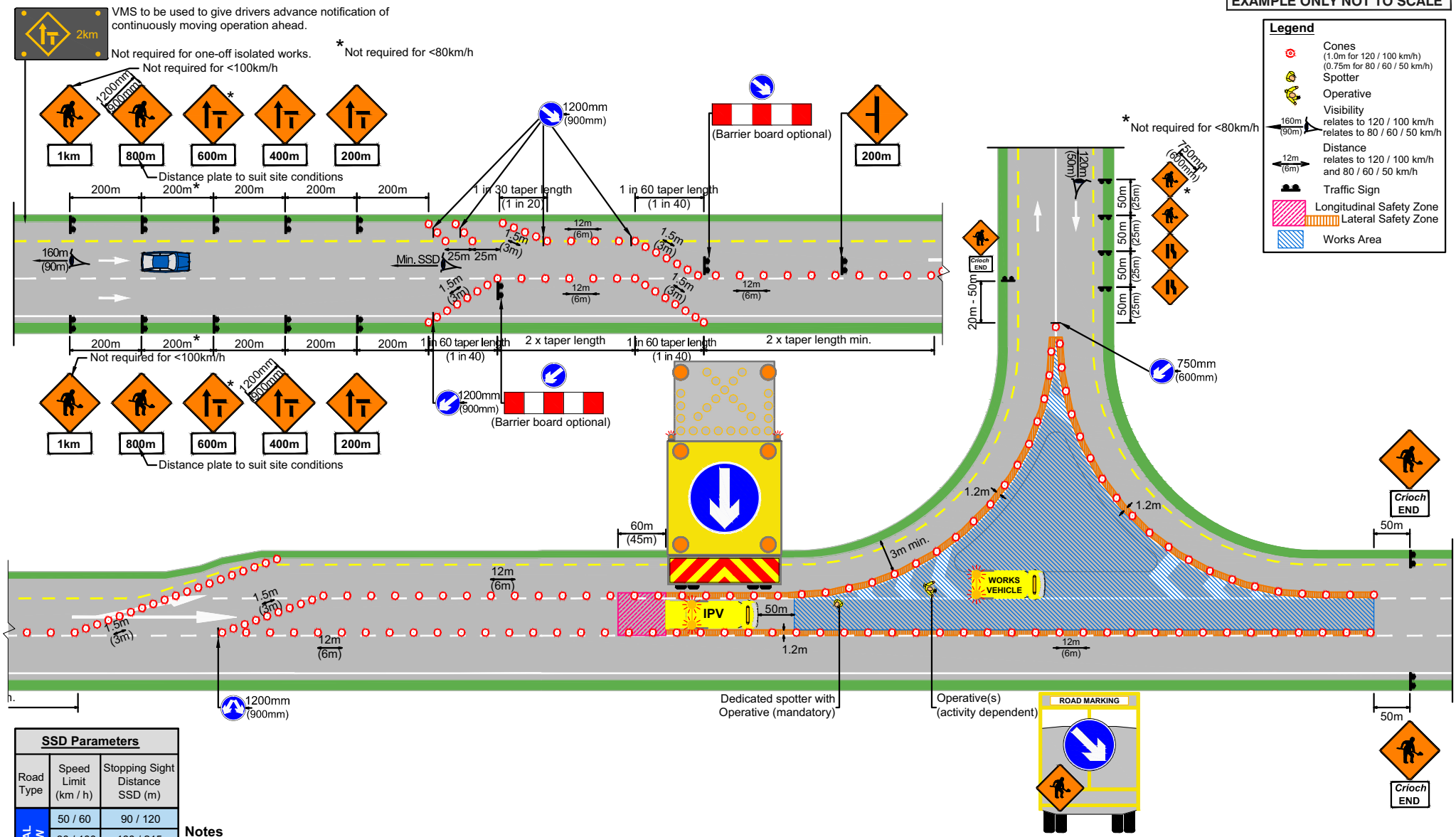
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. This setup may also be used for bifurcation arrows by extending the longitudinal safety zone in advance. Vehicles and plant to cross temporary slip road access only when it is safe to do so.

March 2014

Screed Applied Markings

Mainline Carriageway - Compact Island Hatching

Static

Dual C/W & Motorway (All Speeds)

2-Lane (Off-Peak Only)

RM48

RM48

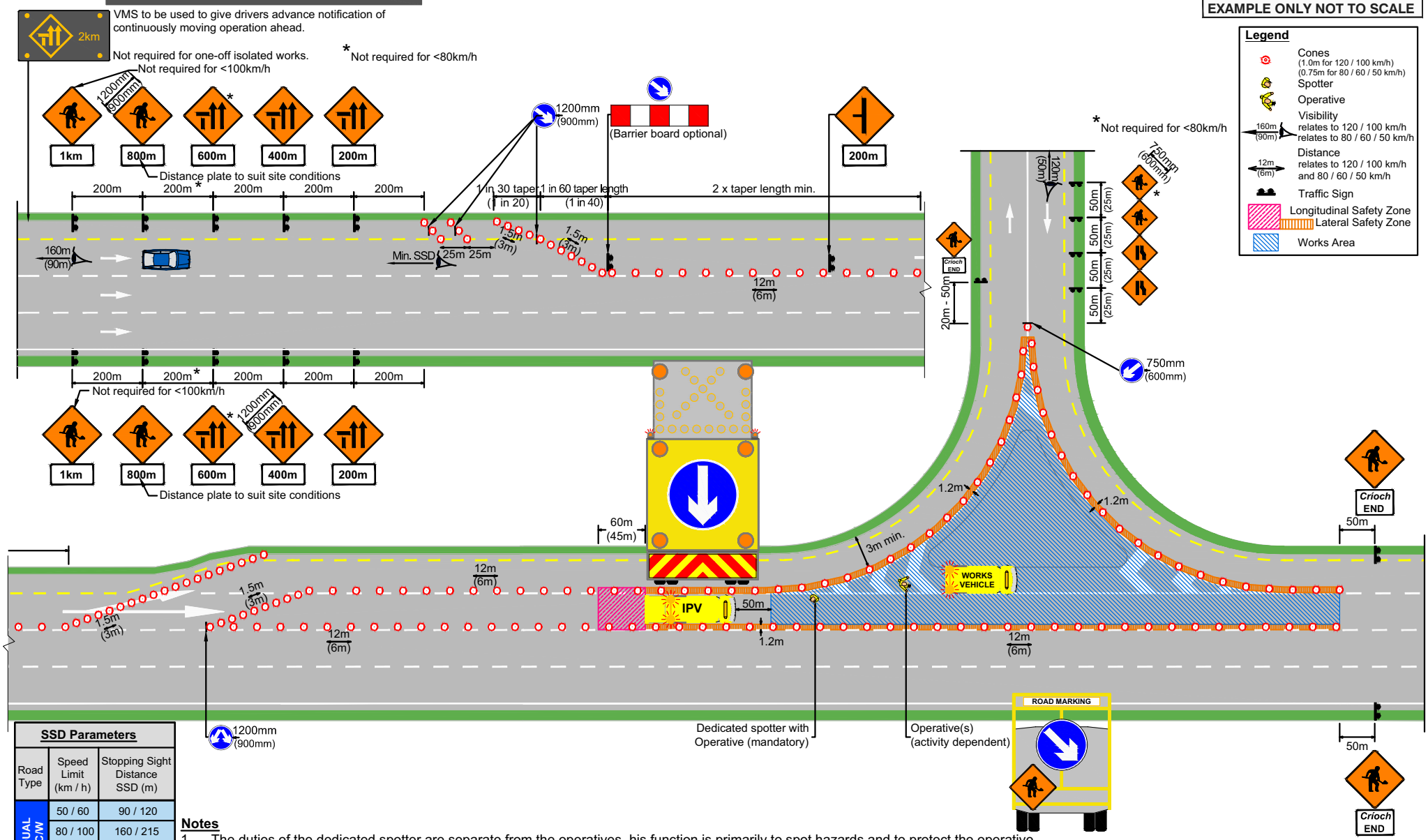
NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. This setup may also be used for bifurcation arrows by extending the longitudinal safety zone in advance. Vehicles and plant to cross temporary slip road access only when it is safe to do so.

March 2014

Screed Applied Markings

Mainline Carriageway - Compact Island Hatching

Static

Dual C/W & Motorway (All Speeds)

3-Lane (Off-Peak Only)

RM49

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

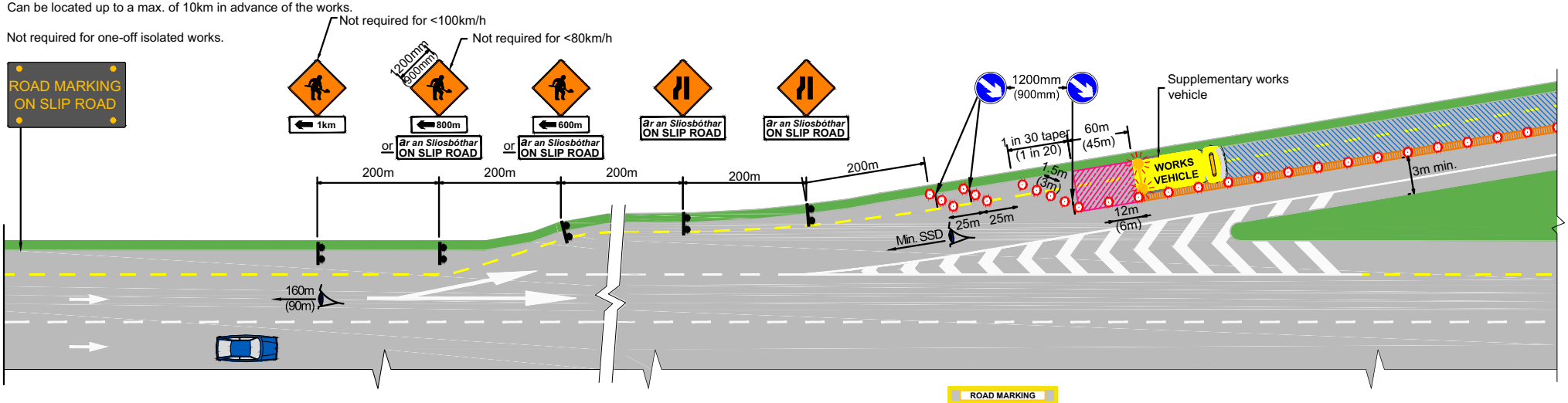
Road Marking

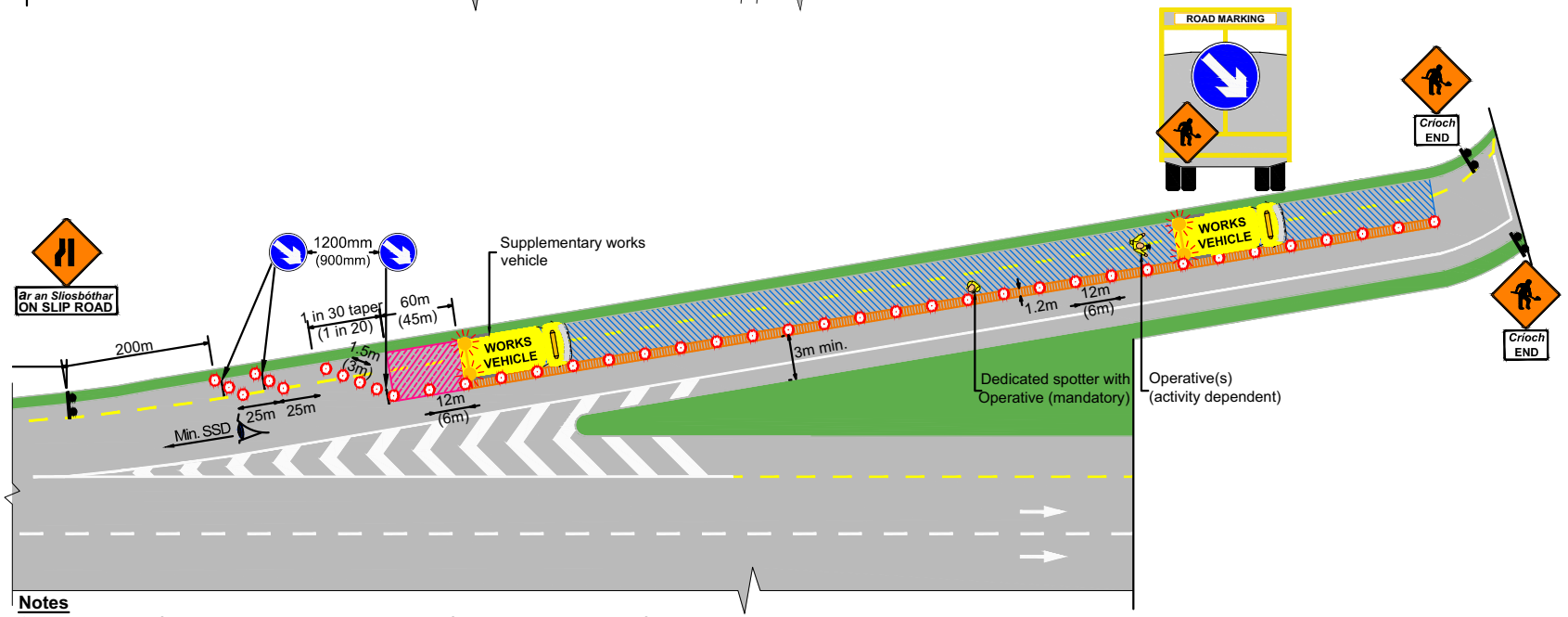
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.





SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility 160m (90m) relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance 12m (6m) relates to 120 / 100 km/h and 80 / 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone / Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.

March 2014

Screed Applied Markings

Off-Ramp - e.g. Rumble Strips, Yield Line, etc. (Left Side)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

RM50

RM50

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Temporary Traffic Management Guidance Handbook

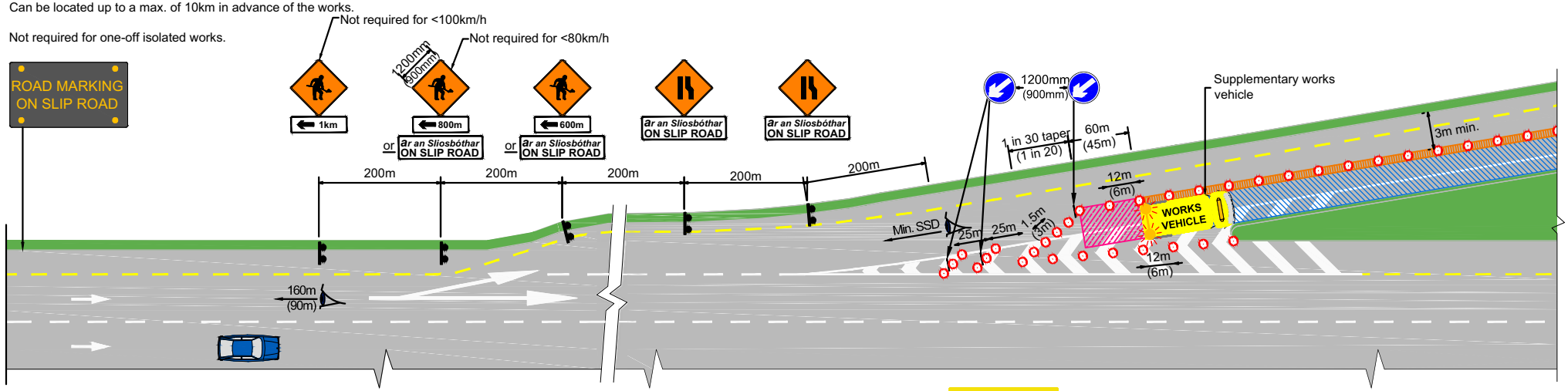
Road Marking

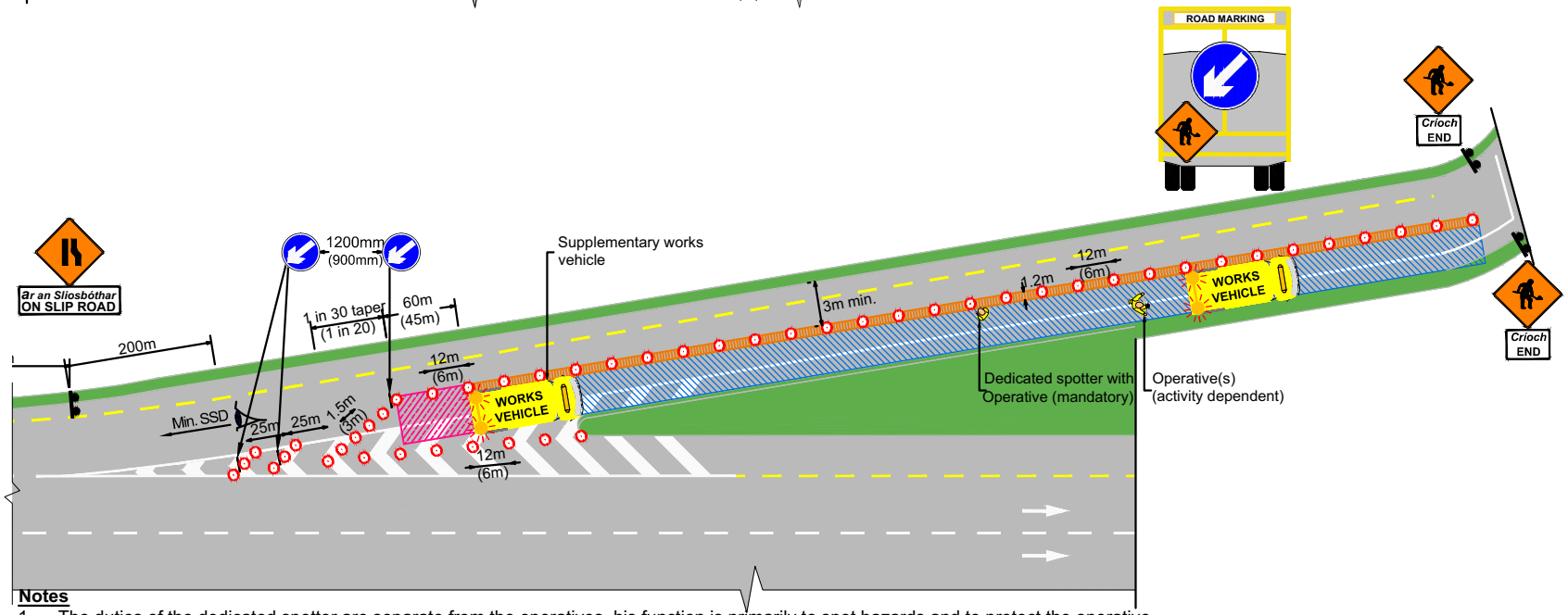
RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE

VMS to be used to give drivers advance notification of continuously moving operation ahead.
Can be located up to a max. of 10km in advance of the works.

Not required for one-off isolated works.





SSD Parameters

Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Legend

- Cones (1.0m for 120 / 100 km/h) (0.75m for 80 / 60 / 50 km/h)
- Spotter
- Operative
- Visibility 160m (90m) relates to 120 / 100 km/h relates to 80 / 60 / 50 km/h
- Distance 12m (6m) relates to 120 / 100 km/h and 80 / 60 / 50 km/h
- Traffic Sign
- Longitudinal Safety Zone / Lateral Safety Zone
- Works Area

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.

March 2014

Screed Applied Markings

Off-Ramp - e.g. Rumble Strips, Yield Line, etc. (Right Side)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

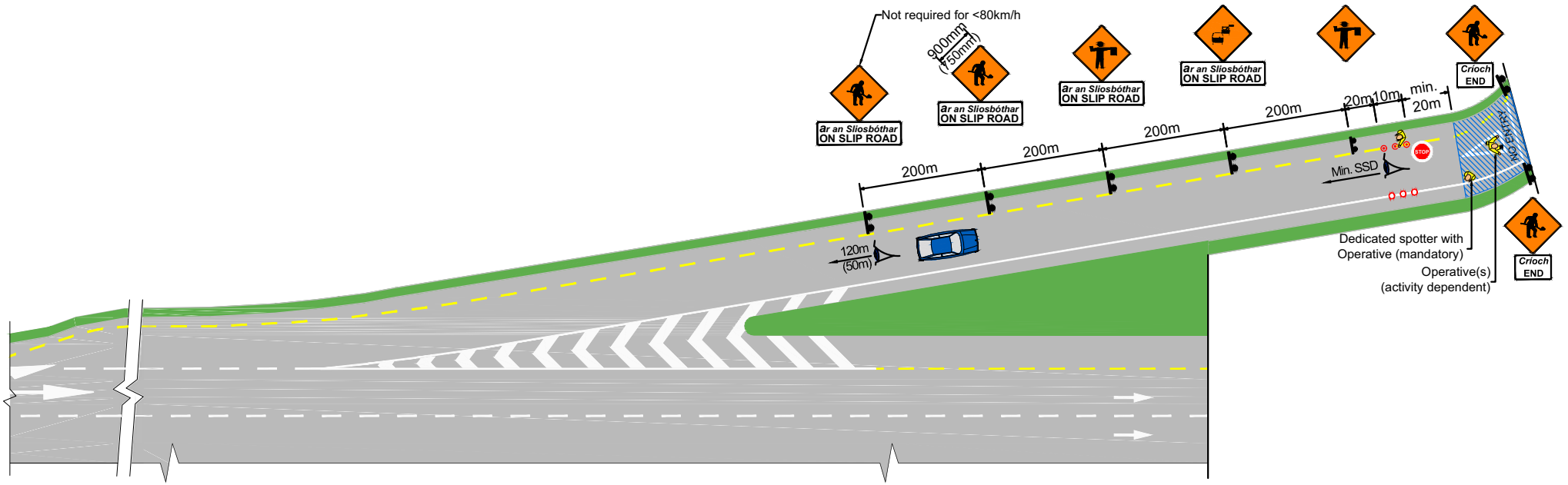
RM51

RM51

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

EXAMPLE ONLY NOT TO SCALE



SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operative.
2. All Stop operation to be < 5mins per session. Each time the All Stop is to be lifted, vehicles and operatives must move to a safe location to allow traffic to pass.
3. Queues must be allowed to dissipate after each short work session, and must not continue onto the mainline carriageway.

Legend

- Cones (0.75m min)
- Cones (alternative position)
- Spotter
- Operative
- Visibility (120m / 50m) relates to 100 / 80 km/h, relates to 60 / 50 km/h
- Distance (200m / 25m) relates to 100 / 80 km/h and 60 / 50 km/h
- Traffic Sign
- All Stop & Operative
- Works Area

March 2014

Screed Applied Markings

Off-Ramp - e.g. Yield Line, etc. (All Stop)

Static

Dual C/W & Motorway (All Speeds)

2 & 3-Lane (Off-Peak Only)

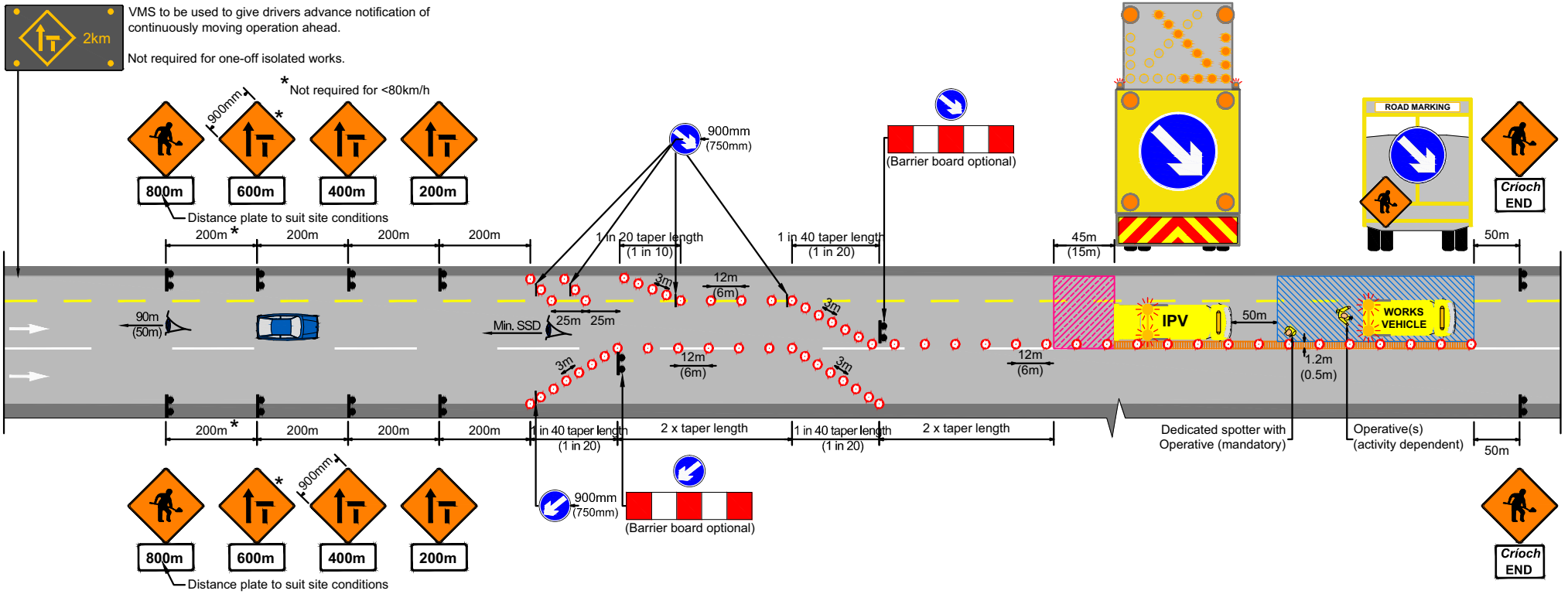
RM52

RM52

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

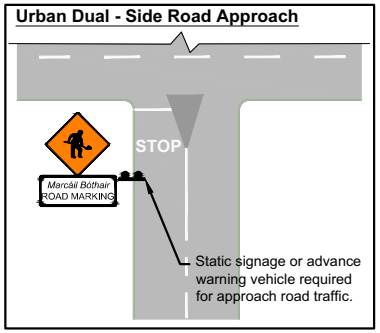
EXAMPLE ONLY NOT TO SCALE

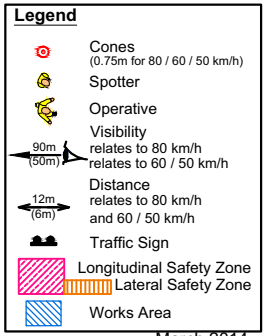


SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. The advance warning signs are to be positioned so that they do not encroach on the running lanes.
3. Pedestrians may need to be directed through the works.
4. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.





March 2014

Screed Applied Markings

Mainline Carriageway - Yellow Box, etc. (Lane 1 Closure)

Static

Dual C/W & Motorway (All Speeds)

2-Lane Urban (Off-Peak Only)

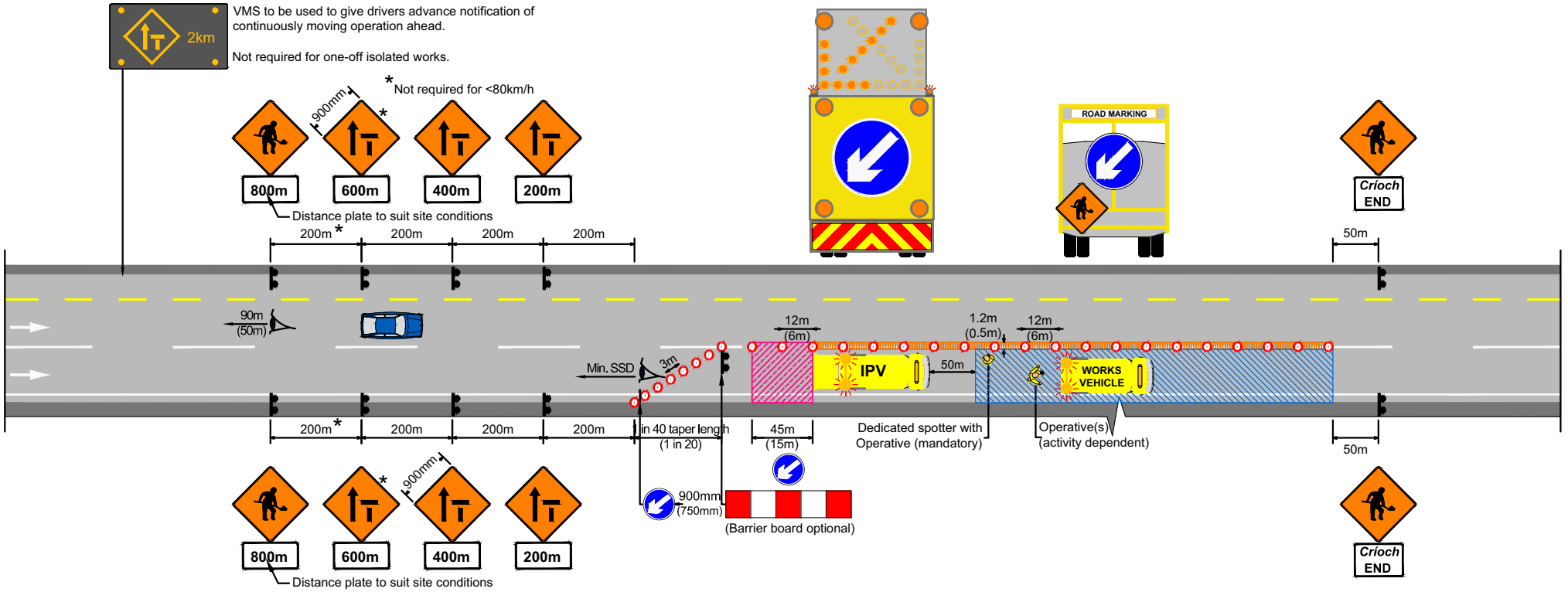
RM53

RM53

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

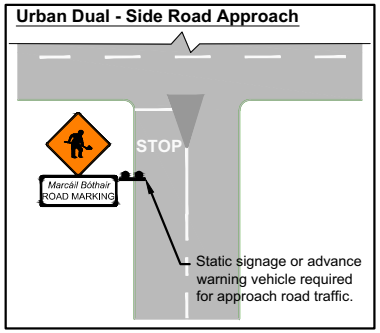
EXAMPLE ONLY NOT TO SCALE

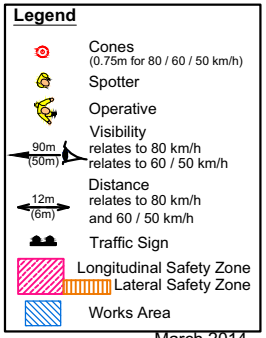


SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. The advance warning signs are to be positioned so that they do not encroach on the running lanes.
3. Pedestrians may need to be directed through the works.
4. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.





March 2014

Screed Applied Markings

Mainline Carriageway - Yellow Box, etc. (Lane 2 Closure)

Static

Dual C/W & Motorway (All Speeds)

2-Lane Urban (Off-Peak Only)

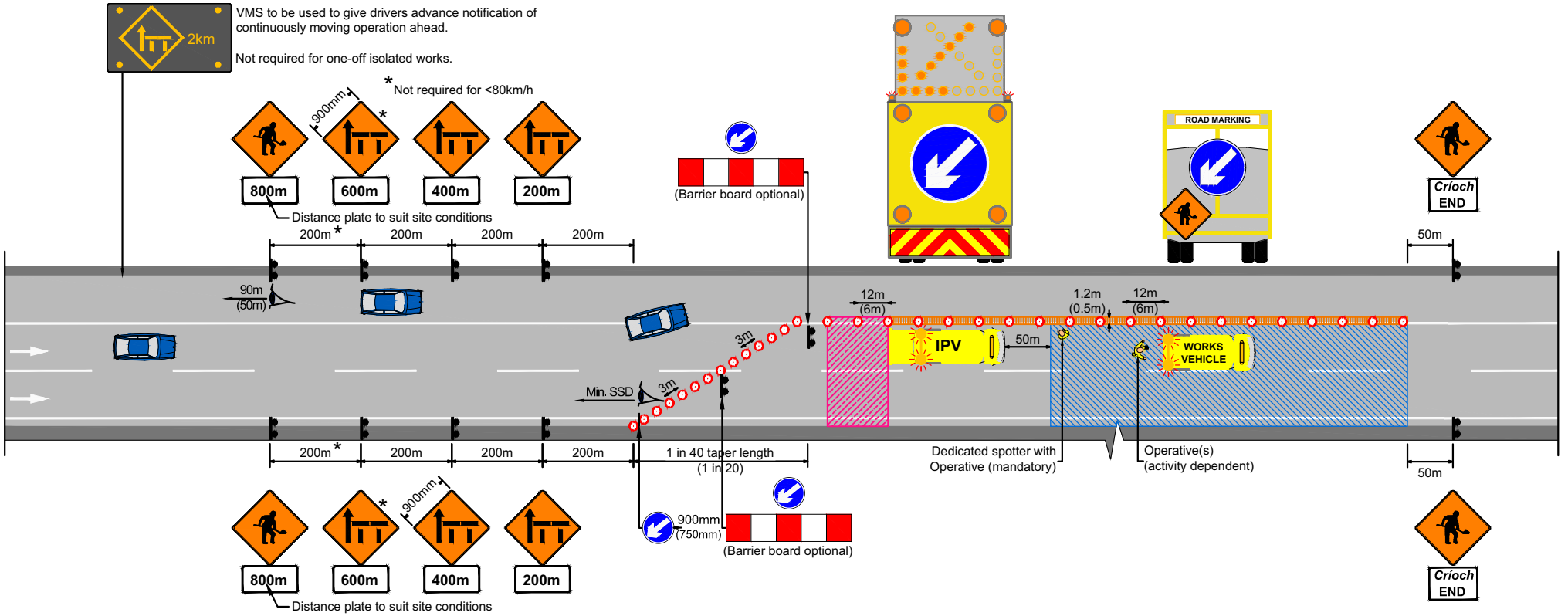
RM54

RM54

Road Marking

RISK ASSESSMENT AND FURTHER DEVELOPMENT OF LAYOUTS WILL BE REQUIRED TO SUIT SITE CONDITIONS

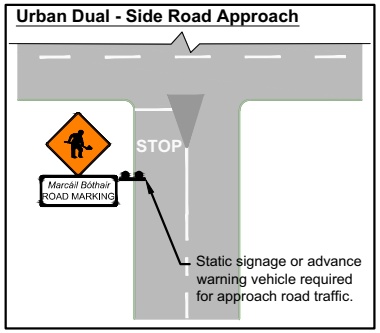
EXAMPLE ONLY NOT TO SCALE

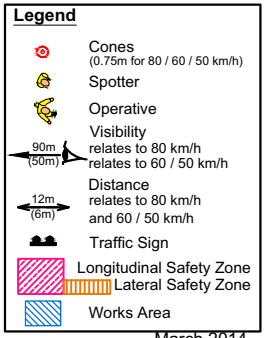


SSD Parameters		
Road Type	Speed Limit (km / h)	Stopping Sight Distance SSD (m)
DUAL C/W	50 / 60	90 / 120
	80 / 100	160 / 215
	120	295

Notes

1. The duties of the dedicated spotter are separate from the operatives, his function is primarily to spot hazards and to protect the operatives.
2. The advance warning signs are to be positioned so that they do not encroach on the running lanes.
3. Pedestrians may need to be directed through the works.
4. Additional spotter(s) / flagmen may be required depending on the activity or for a series of accesses.





March 2014

Screed Applied Markings

Mainline Carriageway (Lane 1 & 2 Closure)

Static

Dual C/W & Motorway (All Speeds)

2-Lane Urban (Off-Peak Only) - With Bus Lane

RM55

RM55

7 IN THE EVENT OF AN EMERGENCY

CALL EMERGENCY SERVICES (999 or 112)

KNOW YOUR EXACT LOCATION

In the case of a Serious Incident

- Call Emergency Services.
- Stop work, making sure that all vehicles and site equipment are safe.
- Stop traffic if necessary – do not move injured person.
- Assist injured person with First Aid, if appropriate, at the instruction of emergency services phone operator.
- Call Site Supervisor by phone/radio - do not leave injured person alone.
- Arrange for easy access and egress for Emergency Services.
- Wait for Emergency Services, and provide access through the works where required.
- Assist Gardaí with Traffic Control if required.
- Maintain safe traffic flow around injured person if applicable.

In the case of a Minor Accident

- Assist injured person with First Aid.
- Stop work if necessary.
- Report injury to the Site Supervisor.
- Log accident.

Reporting Accidents and Incidents

- All site accidents and incidents must be immediately reported to the Site Supervisor who in turn will report to the appointed Safety Officer.
- All personnel must fully assist in any investigation resulting from an accident.
- Contact the Employer's Representative, if any of the following take place:
  - A fatality
  - Any injury to the public requiring medical attention.
  - All notifiable accidents to employees.
  - Road traffic accidents due to or near the works where no injury has been sustained.
  - Any dangerous occurrence or incident.
- Contact the Health and Safety Authority (HSA) for all notifiable accidents.

8 Temporary Traffic Management Plan - Risk Assessment Pro Forma

Reference No.	

General Information

Client:	
PSDP:	
PSCS:	
TTM Installer:	
General Location: (e.g. Route, Town/Village/Townland)	
Time of Day:	

Works Description

Activity/Operation:	
Planned Duration: (at Particular Site Location)	
Layout Used as Basis for TTM:	TS
Alternative TTM Layout: (If Applicable - Reference and Attach)	

Traffic Counts (3 mins)

Count No.	Time	Count

Site Conditions

Surrounding Land Use: (e.g. Urban, Rural, Sub-Urban, etc.)	
Speed Limit:	
Carriageway Type: (e.g. Single, Dual, Motorway, etc.)	
Carriageway Width:	
Hard Shoulder Width: (If Present)	
Pedestrian Facilities: (List any Facilities in Place)	
Other Conditions/Hazards: (e.g. Schools, Hospitals, Special Care Facilities, etc.)	

Site Specific Risks

Is Minimum Stopping Sight Distance (SSD) Maintained to the Works?	
Are Pedestrian Facilities Provided? (Describe Where Applicable)	
Weather Conditions: (List as Appropriate)	
Other Risk Items: (List as Appropriate)	

Modifications to Layout (List/Sketch as Appropriate)

Signed:_____

Date:_____

Notes: Risk Assessment of the TTM plan must be carried out by the TTM installer prior to the installation of the TTM.

This pro forma is available from the NRA in stand alone PDF format upon request.

9 REFERENCES AND ACKNOWLEDGEMENTS

These guidelines are based on the standards and guidance published in the following documents:

- Chapter 8 of the Traffic Signs Manual 2010 (DTTAS).
- Guidance for the Control and Management of Traffic at Road Works (DTTAS, HSA, NRA, LGMSB).
- Roads Act 2007.
- Road Traffic Act 2011.
- Safety, Health and Welfare at Work Act 2005.
- Safety, Health and Welfare at Work (Construction) Regulations 2013.
- Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2012.
- Guidelines for Working on Roads - Guide to the Safety, Health and Welfare at Work (Construction) Regulations 2008 (HSA).
- Guidelines on the Procurement, Design and Management Requirements of the Safety Health and Welfare at Work (Construction) Regulations 2006 (HSA).
- Road Safety Markings Association (RSMA) Best Practice Guide, UK.
- Guidelines for the use of Variable Message Signs on National Roads (NRA).
- EN 12966 Vertical Road Signs: Variable Message Signs

The National Roads Authority gratefully acknowledges the technical assistance of RPS Group in the preparation of this handbook. It would also like to acknowledge the significant collaboration with those who participated directly in the development of this document, including the following:

- The City & County Managers Association
- Local Authority Engineering and Health & Safety Personnel
- National Road Offices, with specialist industry knowledge
- Road Marking Industry, in association with the Construction Industry Federation (CIF)
- Traffic Management Service Providers
- The Health & Safety Authority (HSA)

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