EMERGENCY DIVERSION ROUTE SYMBOLS

Including Emergency Diversion Route Development Guidance

A Department of Transport, Tourism and Sport Advice
Note to Local Authorities in the use of emergency route diversion symbols
Traffic Signs Advice Note: Emergency Route Diversion Symbols

Document Control Sheet

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| Pages: | 20 | Appendices: | 3 |

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PURPOSE

The purpose of this Advice Note is to provide guidance in the use/deployment of emergency diversion route symbols. This Advice Note also provides mock-up photographic illustrations of their use.

WHAT ARE EMERGENCY DIVERSION ROUTE SYMBOLS?

They are symbols that are placed on signage to advise the motorist of emergency diversion routes in the event of a closure of part of the dual carriageway and/or motorway network.

WHY WERE THEY INTRODUCED?

They were introduced to provide clearly signed pre-planned emergency diversion routes for diverted traffic.

WHAT DO THEY LOOK LIKE?

See page 3 of this Advice Note.

EMERGENCY DIVERSION DESIGN CRITERIA

This section outlines the criteria the designer should keep in mind when selecting emergency diversion routes and applying symbols.

EMERGENCY DIVERSION DESIGN METHODOLOGY

This section outlines the methodology to be employed when selecting diversion routes and erecting diversion signage on the network.

EXAMPLES OF APPROPRIATE USE

See page 13 of this Advice Note.
PURPOSE:

The purpose of this Advice Note is to provide guidance in the use/deployment of emergency diversion route symbols. This Advice Note also provides mock-up photographic illustrations of their use.

WHAT ARE EMERGENCY DIVERSION ROUTE SYMBOLS?

They are symbols that are placed on route directional signage to advise the motorist of pre-defined emergency diversion routes in the event of a closure of part of the dual carriageway and/or motorway network. Currently, the symbols below are available for use. Other symbols, should the need arise, can be developed, such as the cross symbol below.

WHY WERE THESE SYMBOLS INTRODUCED?

These symbols were developed and introduced by Transport Infrastructure Ireland (TII) to improve responses to closures on the National road network and to provide clearly defined emergency diversion routes for diverted traffic. The emergency diversion route plan, will also provide clear instructions for locations along the diversion routes where Portable VMS (Variable Message Signs) or the presence of An Garda Síochána is required and will also assist in the reduction of traffic delays in the event of an incident that results in a closure on part of the network and improve response times for the emergency services.

WHAT DO THEY LOOK LIKE?

![Current Symbols](image1)

*Fig 1: Current Symbols*

![Additional Symbol](image2)

*Fig 2: Example of Additional Symbol*
EMERGENCY DIVERSION DESIGN CRITERIA

The following should be considered when selecting emergency diversion routes;

**Number of Lanes**
where possible, the emergency diversion route should aim to follow roads with more than one lane to maximise the capacity of the diversion route.

**Length of Route**
the designer should aim to reduce the length of the emergency diversion route bearing in mind that the route should offer sufficient capacity to handle the traffic requirements.

**Junction Types**
signalised junctions and roundabouts should be prioritised over uncontrolled T-junctions as they can manage traffic flows without intervention, particularly where the emergency diversion route takes a right-hand turn.

**Junction Spacing**
junction spacing should be sufficient to reduce the impact of traffic tailbacks. This is particularly important at the start of the emergency diversion route where the impact of tailbacks can have significant impact on diverted traffic leaving the dual carriageway/motorway section.

The following should be considered when designing the signage for the emergency diversion route:

**Emergency Diversion Route Symbols**
In order for the emergency diversion route to operate effectively, the signage for the diversion route uses distinguishable symbols to aid in driver wayfinding. Figure 1 details the main symbols to be adopted for the emergency diversion routes.

**Assigning Diversion Symbols**
As the emergency diversion route will generally be travelled in both directions on the same route, a different symbol will be assigned to each direction of the emergency diversion route to reduce the possibility of driver confusion at junctions along the route. Typically, the solid symbols will be used in preference to the hollow symbols (due to visibility and for use on VMS signs). This will not always be achievable, however, where multiple emergency diversion routes interface at shared locations.

**Symbol Sign Patch Size**
The tile height is to be 10 stroke widths for existing signs the patch is to be placed on. If available space is limited on the existing sign a tile height of 8 stroke widths can be used.

**Standalone Symbol Sign Size**
The tile height is to be 10 stroke widths for standalone signs.

**Symbol Size**
Symbol size should be six tenths (0.6) the height of the tile.
| **Sign Border** | Provision of black border of 0.5 stroke widths around outside of diversion symbol sign tile where they are to be placed on signs with white background. Consequently, the height and width of panels will increase by 1 stroke width. |
| **Symbol Sign ‘x’-Height** | Minimum ‘x’ height of 80mm to be provided on existing signs, proposed signs and sign patches. |
| **Symbol Sign Patch Layout** | Appendix I contains the patch layouts for the various tile heights detailing the strokes widths for the appropriate symbols. Appendix B contains tables detailing the patch and symbol heights and widths for the typical ‘x’ heights that would be encountered along the diversion routes. The border height is also detailed on the tables. |
| **Backing Board** | Grey backing boards will not be provided on standalone symbol signs except where symbol signs are placed adjacent to existing signs with grey backing boards. |
| **Direction Arrows** | The size of direction arrows on symbol signs should not exceed the size of direction arrow on adjacent signs and in general should, where possible, match the size of this arrow. |
| **Symbol Sign Placement** | Diversion symbol signage should be placed where possible on existing signs as patches. Where inadequate space is available on the sign a standalone sign should be provided. In difficult situations, the symbol sign can be incorporated into existing signs using an add-on panel. |
| **Initial Signs** | It is recommended that confirmation signage should be put in place within the first 500m to 1000m of the diversion route. The initial section of the emergency diversion routes should be assessed in relation to the need for additional signage and included as required. |
| **Repeater Signs** | Diversion routes should be assessed to determine locations where repeater signs are appropriate along the emergency diversion route. This might typically arise in the scenario where there are long sections of the diversion route where no existing signs are present. It is important that a diversion symbol is clearly visible in advance of each diversion point on the route. |
| **Route Confirmation Signs** | Route confirmation signage can be provided at locations along the emergency diversion route where existing signage does not reference the main route. Appendix II details an example of this signage. At the discretion of the designer this signage can be omitted where the diversion route is considered straightforward. |
Signage at Roundabout Exits

Dual signage, straight ahead sign in verge to the left and left direction sign in the splitter island to the right, should be provided at exit to confirm the route of the diversion. Appendix II details an example layout of the signage layout at a roundabout exit. The designer and subsequently the installer should ensure that the orientation of these signs is appropriate and does not cause confusion. The straight-ahead sign in verge to the left should be placed 10-15m away from the circulatory carriageway to ensure it does not cause confusion to drivers on the roundabout.

Sign Mounting

Signs can be mounted on existing signs where space is available, however, signs should not be mounted under Warning or Regulatory signs.

Sign Placement

The placement of symbol patches/symbol signs will depend on the individual sign and location. The designer will have to use best judgement based on experience and sign design standards (Traffic Signs Manual) when selecting locations to place the symbol patches/symbol signs. Alternative options/locations should be provided to guide the sign installer when the desirable symbol patch/symbol sign position is not achievable.

EMERGENCY DIVERSION DESIGN METHODOLOGY

The following methodology outlines the process for selection of emergency diversion routes on the road network.

Data Collection

OS Mapping, Variable Message Sign locations, traffic information, previously generated Emergency Diversion Routes if available. Determination of the viability of the proposed route to carry the type and volume of traffic to be diverted.

Preliminary Routes Options

The design team should identify a number of preliminary route options for the emergency diversion route using the data collected. Any previously generated diversion route should be reviewed at this stage to determine if it is a viable route option.

Route Familiarisation

The design team should familiarise themselves with the roads and junctions on the emergency diversion route options through a site visit and/or by using Google Streetview (note this may not be fully up to date). Any changes or updates to the road network should be noted.
Selection of Proposed Route

Based on the selection criteria and additional information collected from the site visit, the design team should be in a position to select a preferred emergency diversion route.

Consultation

An important part of the process of developing a robust emergency diversion route will be consultation with the various parties impacted by the route. Typically, these parties will be TII, Local Authorities and An Garda Síochána. Locations where intervention and portable VMS are required along the route should be agreed. It is recommended that consultation is carried out with all parties together to address any issues and agree the best way forward.

Implement Consultation Items

The items that emerge from consultation meetings should be implemented to finalise the emergency diversion route.

Select Preferred Diversion Route

Once the emergency diversion routes have been agreed by the various parties they can be progressed to the detailed design stage. The agreed intervention locations if required should be noted for each emergency diversion route.

The following methodology outlines the process for developing the signage along the emergency diversion route.

Site Survey

Conduct a video survey along the route and photograph all existing signs. A measurement strip should be utilised when taking photographs of the existing signs to aid in determining the ‘x’ height of the sign, the height of the route letters and numerals and space available on the sign. Note: this approach is not always possible due to unavailability of access to sign face, i.e. high mounted signs, overhead gantry signs, etc. In those situations, the approach in the first instance is to acquire a copy of the sign as-built drawing for that diversion route (if available) or alternatively assume the ‘x’ height and the route letters and numerals height based on TSM requirements for the type of sign and sign location.

Determine Diversion Route Symbols

The emergency diversion route should be analysed in relation to adjacent diversion routes to determine the required number of symbols and assign to symbols to each diversion route. It is important to check that there are no symbol conflicts prior to finalising the symbol assignments. The table below details an example table showing the assigned symbols for each diversion/adjacent diversion.

<table>
<thead>
<tr>
<th>Diversion</th>
<th>Junction To/From</th>
<th>Symbol</th>
<th>Diversion</th>
<th>Junction To/From</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northbound 1</td>
<td>J4 to J3</td>
<td>■</td>
<td>Southbound 1</td>
<td>J3 to J4</td>
<td>▼</td>
</tr>
<tr>
<td>Northbound 2</td>
<td>J5 to J4</td>
<td>●</td>
<td>Southbound 2</td>
<td>J4 to J5</td>
<td>◆</td>
</tr>
</tbody>
</table>
The diversion routes should be analysed to determine the diversion routes that share a common section of road. Sections of road that are shared amongst diversion routes will require two or more symbols signs. The table below details an example table showing the diversion routes that share a common section.

<table>
<thead>
<tr>
<th>Diversion</th>
<th>Diversion</th>
<th>Symbol NB</th>
<th>Symbol SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northbound 1</td>
<td>Southbound 2</td>
<td>□</td>
<td>◆</td>
</tr>
<tr>
<td>Northbound 2</td>
<td>Southbound 1</td>
<td>●</td>
<td>▽</td>
</tr>
</tbody>
</table>

Review the site photographs to determine the ‘x’ height of the sign and determine space available for placement of symbol sign patch. Assign a unique sign reference to each symbol sign.

Appendix II contains comprehensive sign examples showing recommended locations and alternative location for symbol patches. Examples have been generated for different sign types based on the criteria. These examples will provide guidance to designers and assist in providing consistency in signage across the diversion routes.

Using the guidance from the sign requirements above, generate the initial sign proposals for the routes. Sign drawing packages should be generated for each route and should include an Emergency Diversion Route Plan drawing and individual sign drawings. It is recommended that the individual sign drawings should contain the sign reference, sign location plan, sign photograph, sign panel details, alternative sign location if required and installation notes.

Appendix IV contains examples of the route signage drawings.

Generate the message for the Variable Message Signs on the approach to the start of the emergency diversion route. Examples of co-ordinated VMS messages are detailed in the figures below which show the message format that should be followed to ensure message consistency across all diversions.
Fig 3: VMS Message on Link Before Closure

Fig 4: VMS Message Two Links Before Closure

Fig 5: Example of a Strategic VMS Message
Mobile Variable Message Sign Locations

The use of the permanently installed VMS signs shall be supplemented, if required, by mobile VMS signs. The designer should review the consultation notes to determine the agreed locations, if any, where the mobile VMS signs are required.

Emergency Diversion Route Signage Review

The initial design package should be issued to TII for review. The designer should review comments and implement recommendations as required to generate an approved design package for issue to the installer. A meeting may be required to finalise any outstanding sign issues between the designer and TII in order to progress the approved design package.

Handover of Emergency Diversion Route Signage Package

Delivery in electronic (.PDF) format of all design documentation and contract instructions in a format compatible with the direct use of the documentation for the procurement of supply only / supply & install / install only contracts. This will include a construction set of drawings.
APPENDIX I – SYMBOLS : SIGN PATCH LAYOUTS
(please note, may not be to scale)

WITHOUT BORDERS

10 Stroke Width - Square

8 Stroke Width - Square

10 Stroke Width - Circle

8 Stroke Width - Circle

10 Stroke Width - Triangle

8 Stroke Width - Triangle

10 Stroke Width - Diamond

8 Stroke Width - Diamond
WITH BORDERS

10 Stroke Width - Square

8 Stroke Width - Square

10 Stroke Width - Circle

8 Stroke Width - Circle

10 Stroke Width - Triangle

8 Stroke Width - Triangle

10 Stroke Width - Diamond

8 Stroke Width - Diamond
APPENDIX II – SIGN LAYOUT EXAMPLES

MOTORWAY SIGN EXAMPLES

Gantry Sign

Gantry Sign

Gantry Sign

Gantry Sign

Direction Sign

Red Box indicates alternative patch location
NATIONAL ROAD SIGN EXAMPLES

Gantry Sign

Gantry Sign

Advance Direction Sign

Advance Direction Sign

Direction Sign

Direction Sign

Red Box indicates alternative patch location
REGIONAL AND LOCAL ROAD SIGN EXAMPLES

Gantry Sign

Gantry Sign

Advance Direction Sign

Direction Sign

Direction Sign

Direction Sign

Red Box indicates alternative patch location

STANDALONE SIGNS
APPENDIX III – SIGN DRAWING EXAMPLES
M50 CLOSURE

J5 N2/M50 - J4 R108/M50

SIGN REF: NDR_J5-J4_001

INSTALLATION NOTES:

- [Details of installation notes]

[Diagram showing M50 closure and sign plan]
**Emergency Diversion Instructions**

<table>
<thead>
<tr>
<th>Incident location:</th>
<th>Diversion Distance:</th>
<th>Diversion Symbol:</th>
</tr>
</thead>
<tbody>
<tr>
<td>M50 Closure: Between J5 Finglas to J6 Blanchardstown - Southbound</td>
<td>18.974km*</td>
<td>![Traffic Sign]</td>
</tr>
</tbody>
</table>

*Diversion length calculated from M50/J5 to M50/J6 Junction.*

**Directions:**

<table>
<thead>
<tr>
<th></th>
<th>Diversion Details</th>
<th>Distance Approx. (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Divert Traffic off M50 at J5 Finglas.</td>
<td>0.00</td>
</tr>
<tr>
<td>2.</td>
<td>Follow Signs for N2 Ashbourne.</td>
<td>0.58</td>
</tr>
<tr>
<td>3.</td>
<td>Proposed Portable VMS location.</td>
<td>3.20</td>
</tr>
<tr>
<td>4.</td>
<td>Follow N2 north to J2 St Margaret’s.</td>
<td>5.01</td>
</tr>
<tr>
<td>5.</td>
<td>Take the Second Exit at the 1st roundabout.</td>
<td>5.23</td>
</tr>
<tr>
<td>6.</td>
<td>Take the Second Exit at the 2nd roundabout.</td>
<td>5.74</td>
</tr>
<tr>
<td>7.</td>
<td>Take the Second Exit at the 3rd roundabout.</td>
<td>6.19</td>
</tr>
<tr>
<td>8.</td>
<td>Take the Second Exit at the 4th roundabout.</td>
<td>6.60</td>
</tr>
<tr>
<td>9.</td>
<td>Take the First Exit at the 5th roundabout.</td>
<td>7.31</td>
</tr>
<tr>
<td>10.</td>
<td>Take the Second Exit at the 6th roundabout.</td>
<td>7.90</td>
</tr>
<tr>
<td>11.</td>
<td>Take the First Exit at the 7th roundabout.</td>
<td>8.20</td>
</tr>
<tr>
<td>12.</td>
<td>Take the Third Exit at the 8th roundabout.</td>
<td>8.55</td>
</tr>
<tr>
<td>13.</td>
<td>Take the Second Exit at the 9th roundabout.</td>
<td>9.21</td>
</tr>
<tr>
<td>14.</td>
<td>Take the First Exit at the 10th roundabout.</td>
<td>10.03</td>
</tr>
<tr>
<td>15.</td>
<td>Take the Second Exit at the 11th roundabout.</td>
<td>10.55</td>
</tr>
<tr>
<td>16.</td>
<td>Turn left onto N3.</td>
<td>10.92</td>
</tr>
<tr>
<td>17.</td>
<td>Follow Signs for M50 (Southbound).</td>
<td>14.37</td>
</tr>
</tbody>
</table>

**VMS Instructions:**

<table>
<thead>
<tr>
<th>VMS Message on Link before closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>M50 CLOSED AHEAD DIVERSION FOLLOW SYMBOLS</td>
</tr>
</tbody>
</table>

**Garda Instructions:**

- Patrol of intersection between N2 and N3 is essential.
- Garda needed on M50 to arrange closure.

**Contractor Instructions:**

- Leave with Garda at the scene.
- Put in Place diversion on M50.
- Consider deployment of portable VMS at J2 on N2 at proposed location shown on route map.

**County Council Instructions:**

- No specific instructions provided.