Hard Shoulder Running

Hard Shoulder Running enables the dynamic temporary use of hard shoulders at road sections, including junctions with the aim to increase road capacity when necessary. Hard Shoulder Running could be considered similar to the creation of an extra lane, but with specific safety issues due to the fact that it is still a hard shoulder where users can stop if they break down. Hard Shoulder Running is triggered by traffic demand, at fixed times or due to manual requests and applied to bottlenecks, locations with poor safety records (black spots) with a recurrent - but not constant - lack of capacity.

Objectives of hard shoulder running

The goal of Hard Shoulder Running is to increase road capacity on a section of the road network, in order to minimize congestion and to reduce the probability of congestion caused incidents

The hard shoulder running service:

- is applied for bottlenecks/problem areas in the network with recurrent, but not constant, lack of capacity, i.e., recurrent peak hour congestion;
- is similar to creating a dynamic extra lane triggered by traffic demand, at fixed times (peak hours) or even manually, and therefore requires dynamic traffic management control (see also TMS-DG01 Dynamic lane management).

This extra lane also needs to be controlled in the case of decree or a broken-down vehicle on the hard shoulder.

In specific cases Hard Shoulder Running:

- can be referred to as peak hour lanes. It should be noted that these can also imply extra lanes, which are not necessarily hard shoulders
- can be conceived as an interim solution until an appropriate traffic solution is in place to counter capacity problems
- can be used for dedicated lanes, thus creating extra capacity for a dedicated set of road users like public transport (application case not covered by this deployment guideline, see also TMS-DG01 Dynamic lane management).

Benefits of hard shoulder running

Safety

Hard Shoulder Running enables the temporary, demand-responsive capacity increase of road sections. This results in a better distribution of traffic by allowing road users to adjust more easily to dangerous situations and results in reduction of accidents due to the decrease/elimination of (upstream) congestion.

The impact analysis of comparable systems confirms the positive effect on traffic safety.

Environmental impact

By providing extra capacity, Hard Shoulder Running systems reduce congestion and journey times and reduce accidents. This improves the efficiency of journeys and reduces the pollution generated by each journey

Network efficiency

A demand-oriented increase of the capacity on route sections and at junctions result in an improved traffic flow on the whole network area concerned. From the point of view of users, this also contributes to a more regular traffic flow and to a reduction of travel time losses.

The impact analysis of comparable systems confirms the positive effect of Hard Shoulder Running on network efficiency.

European Dimension

The main European aspect is harmonizing European road user perception and to achieve a European-wide commonly agreed safety level for the Hard Shoulder Running service. Hence future European deployments should deliver:

- Similar unambiguous instructions, on the basis of agreed protocols, for road users to ensure they know how to behave when facing an open or closing hard shoulder.
- Similar safety protocols for the deployment of Hard Shoulder Running and for scenarios when it is necessary to open or close the hard shoulder.

Distinctiveness to other Services

Hard Shoulder Running is a special application of dynamic lane management. As a special service it interacts with the following other European ITS core services:

- TMS-DG02 Variable Speed Limits
- TMS-DG01 Dynamic Lane Management
- TMS-DG05/08 Incident Warning and Management

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Hard shoulder running in Europe

In connection with re-routing TMPs (mainly applied in the northern European states (e.g. Germany, Austria)), the categorization of an initial incident is named scenario. The allocation of a set of measures to a defined scenario is called a strategy. Each of the measures describes, who does what and who is responsible for what.

In connection with multi-measure TMPs (mainly applied in the southern states and France), a strategy is considered to be objectives on a more general / political level. The correlation between the defined incident and the set of measures is called a scenario. Each of the measures is composed of different actions for each involved partner. The table of measures helps to determine all possible and applicable measures of traffic regulation, control and management which might help to solve or minimize it effect of the incident.

Specific elements

Preparation

Before implementation of a Hard Shoulder Running measure feasibility should be carried out answering at least the following questions:

- Is it necessary?
- Will it benefit traffic flow on a network level?
- Are we allowed?
- Is the hard shoulder construction suitable?
- Is deployment safe?
- Does the network have sufficient capacity?

Operation

Hard Shoulder Running is carried out via the following:

- Monitoring
- Safeguarding
- Inform the road user if the hard shoulder is open.
- Inform the road user if the hard shoulder is closed or clearing.

Signage

At the moment there are some different approaches with regards to the presentation of Hard Shoulder Running services to the road user. EasyWay choose to allow several options, because:

- There is no conclusive evidence that one method is better than another.
- A road operator depends on the equipment available to them
  - Common to all options is that they answer to the following:
  - What message should be conveyed to the road user?
    - Hard shoulder is closed
    - Hard shoulder is open
    - Hard shoulder is clearing
    - End of the hard shoulder section
  - What is the applicable speed limit?
  - What signs will be used to convey the message?
  - When and where will this message be conveyed?

EasyWay did choose to limit the options to the following set in order that EasyWay partners will not develop yet another parallel approach in the future (unless it is considered a large improvement by all).

The involved road operators will continue to study what can be considered the best approach between 2016 and 2020.

Hard Shoulder Running – E19 Flanders

Further Information

dg.its-platform.eu

Questions and help

dg.its-platform.eu/user-support

www.its-platform.eu

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