Tunnels: Design and Construction. Communications

1 Purpose and scope

This chapter describes requirements for communications systems for different tunnel solutions.

2 Requirements for communications

2.1 A double-track tunnel bore with evacuation routes to the open air or other safe area, at least every 1000 m.

a) Telecom requirement in tunnel bores and evacuation routes:

- Train radio system GSM-R
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

b) Telecom requirement in safe areas:

- Commercial communication/GSM or fixed GSM-R telephone

c) Requirement for fixed GSM-R telephone in cross-cuts/intervention points for use by the emergency services:

- This requirement is to be clarified with the local emergency services for each tunnel (emergency response plan)

2.2 One double-track tunnel bore with parallel service/evacuation tunnel with cross-connection for evacuation, at least every 1000 m.

a) Telecom requirement in tunnel bores:

- Train radio GSM-R
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

b) Telecom requirement in parallel service/evacuation tunnel:

- Train radio GSM-R
- Commercial communication/GSM or fixed GSM-R telephone (mounted in cross-connection between the train tunnel and the service tunnel).
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

c) Requirement for fixed GSM-R telephone in cross-cuts/intervention points for use by the emergency services: This requirement is to be clarified with the local emergency services for each tunnel (emergency response plan)

2.3 Two separate single-track tunnel bores with cross-connection between these, at least every 500 m.

a) Telecom requirement in the tunnel bores:

- Train radio GSM-R
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

b) Telecom requirement in cross-connections between the bores (safe area)

- Commercial communication/GSM or fixed GSM-R telephone.

c) Telecom requirement in cross-cuts/intervention points that lead to the open air:

- Commercial communication/GSM
- Fixed GSM-R telephone for use by the emergency services: This requirement is to be clarified with the local emergency services for each tunnel (emergency response plan)

2.4 Two separate single-track tunnel bores with service tunnel, connected by evacuation routes, at least every 500 m.

a) Telecom requirement in the tunnel bores:

- Train radio GSM-R
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

b) Telecom requirement in service tunnel (safe area):

- Train radio GSM-R
- Commercial communication/GSM or fixed GSM-R telephone
- Emergency communication system for the emergency services, TETRA, if necessary also the system currently in use (VHF)

c) Telecom requirement in evacuation routes:

- Commercial communication/GSM or fixed GSM/R telephone (classed as safe area).

d) Requirement for fixed GSM-R telephone in cross-cuts/intervention points for use by the emergency services: This requirement is to be clarified with the local emergency services for each tunnel (emergency response plan)

2.5 Requirements for radio equipment

a) Radio equipment (repeaters) for GSM-R and MIT must be situated every 500 metres in cross-cuts or in separate telecom recesses.