



45TH ASECAP STUDY & INFORMATION DAYS 2017

The Concession model in the decarbonization era: preparing the infrastructure of the future

Pullman Paris Montparnasse Hotel
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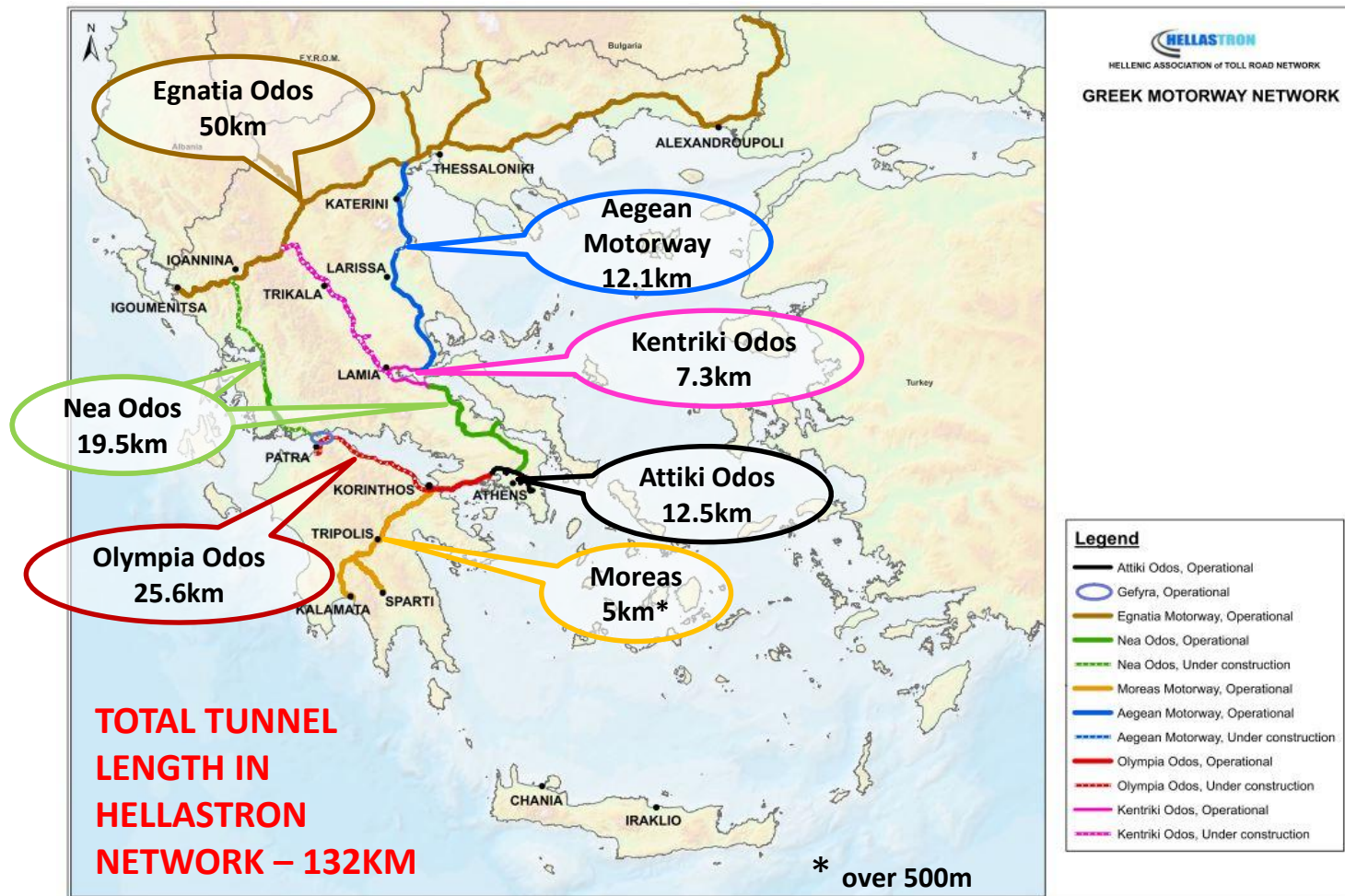
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**TRANSITION AREAS BETWEEN OPEN AIR & TUNNELS
PRESERVING GIVEN LEVELS OF TUNNEL SAFETY MANAGEMENT OPERATIONS
– APPLICATION ON NEA ODOS TUNNELS**

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Hellastron Tunnels



Presentation Content

Scope of the Presentation

Avoidance of extensive corrective maintenance actions that may result after severe incidents/ accidents (i.e. over height vehicle, fire, leakage etc) through :

“measures that minimize serious accidents with major effects on infrastructure by reducing accidents number & severity”

Towards this direction....

- ***Infrastructure***
 - ✘ Well designed geometric alignment
 - ✘ Smooth vertical alignment & inclination
 - ✘ Appropriate hydraulics substructure
- ***Improvement of driving behaviour***
 - ✘ *Drivers' education*
 - ✘ *Enforcement*
 - ➡ ***Communication with the driver***

Approaching Tunnels...



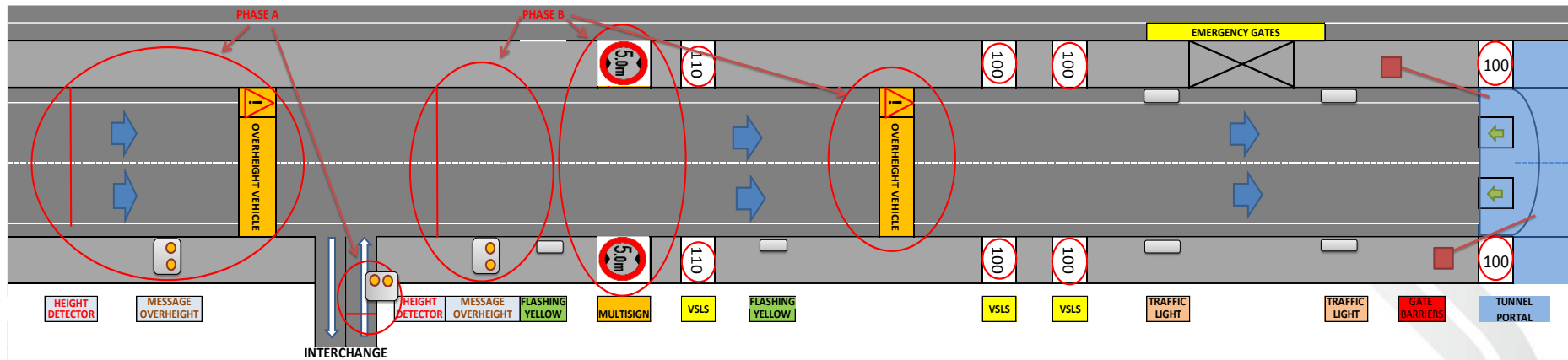
← Transition Area ↓



↓ Tunnel Structure



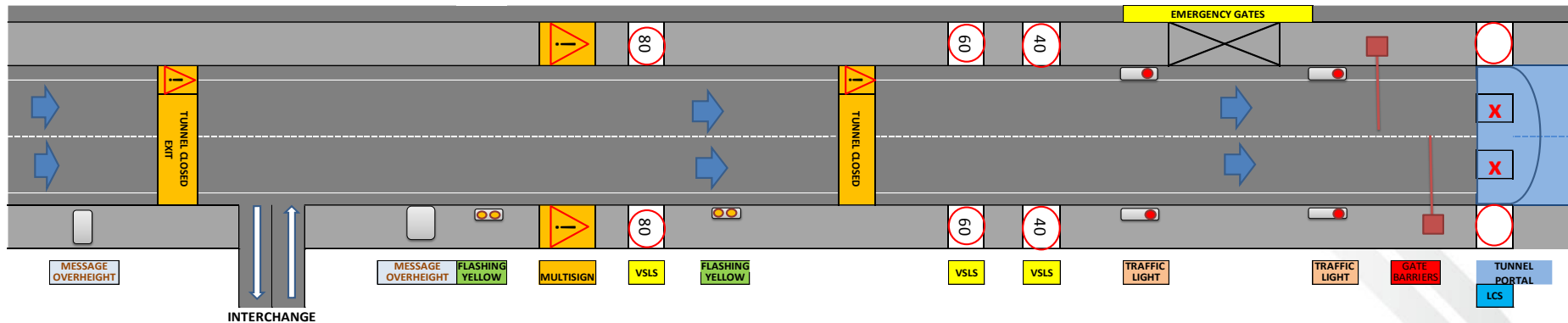
Incident Management - Transition Area (i)



Handling of Over height Vehicles

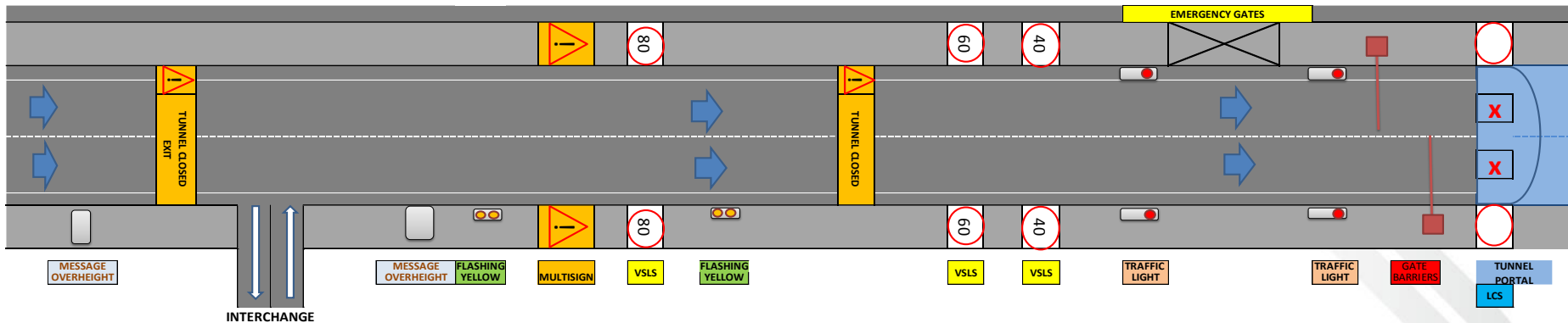
- ➡ 3 Over height Detectors
- ➡ 3 Over height Messages
- ➡ 2 VMS
- ➡ Automated Alarm at TCC for further actions (Traffic Police arrival, equipment activation, tunnel closure e.t.c.)

Incident Management - Transition Area (ii)



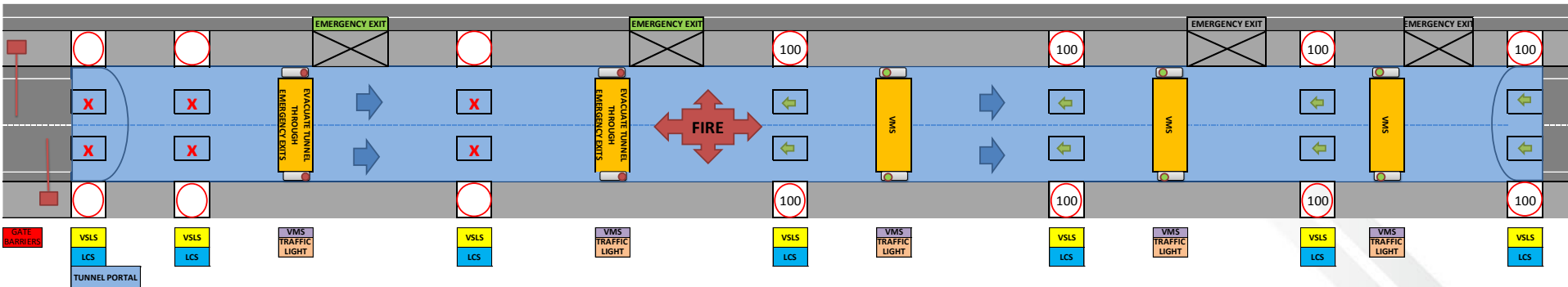
- Multisigns plus VMS
- 3 sets of VLSL for gradient speed decrease in a distance of 200m
- 2 sets of Traffic Signals (with FY to indicate traffic management through Traffic Signals)
 - ⊕ Ahead of emergency gates to facilitate emergency vehicles access from healthy branch
 - ⊕ 30m ahead of tunnel portal to avoid congestion and facilitate emergency vehicles access

Incident Management - Transition Area (iii)



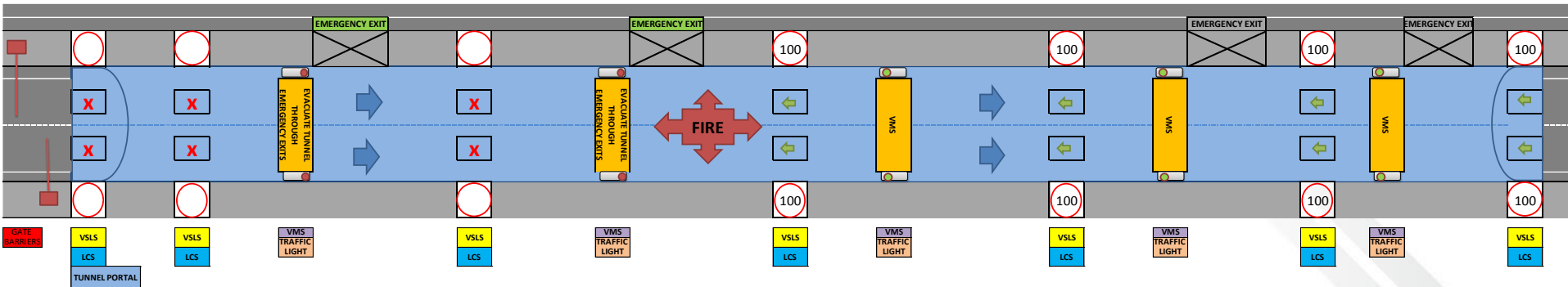
- Emergency Gates
 - ⊕ Fast approach of Emergency Vehicles
 - ⊕ Fast response in diverting approaching traffic
- Gate Barriers
 - ⊕ Staggered arrangement to facilitate emergency vehicles
- Alert to TCC for further actions

Incident Management – Tunnel (i)



- ➔ LCS at portals indicate tunnel closure
- ➔ VMS at emergency exits inform drivers
- ➔ AID detects incident and situation of involved vehicles along
- ➔ Loops data used for calculation of vehicles number ahead of incident
- ➔ CONOVIs for gas emission levels

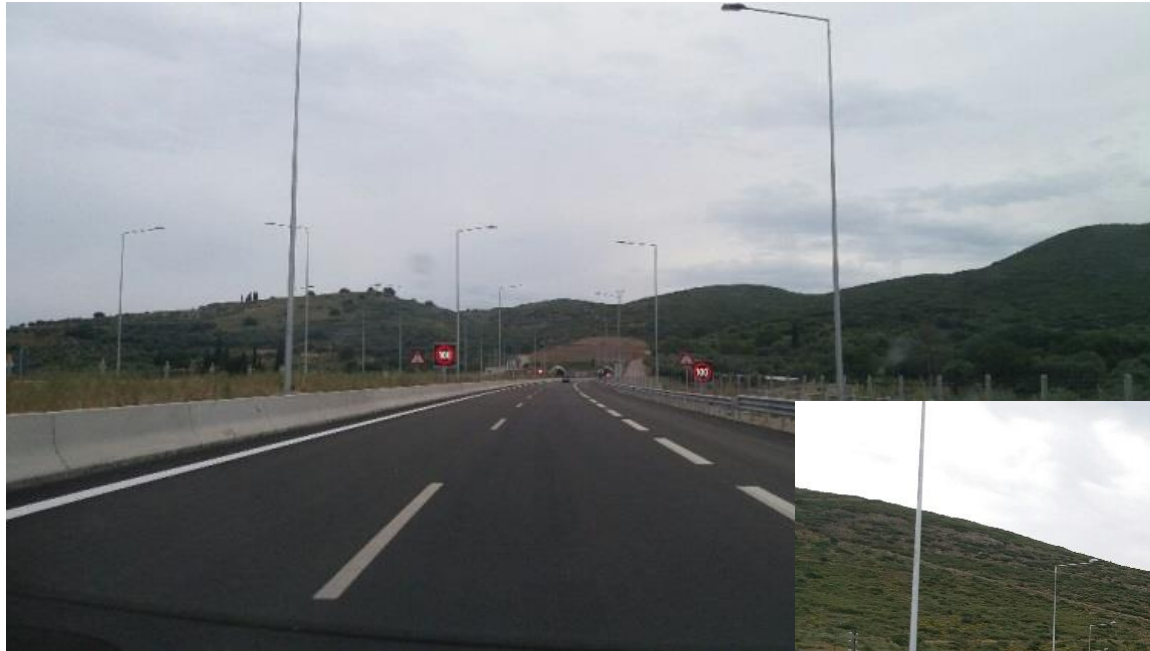
Incident Management – Tunnel (ii)



Fire Case - Prior to ventilation launch

- Confirmation of vehicles number towards the direction of air flow through CCTV Cameras
- Calculation of number of involved vehicles from loops data (Loops data used for calculation of vehicles number ahead of incident)

Incident Management – Photos



VSL

EMERGENCY GATES



Incident Management – Photos



PORTAL & BARRIERS

FIRE HOSE & SIGNS



Incident Management – Photos



VLSL, LCS, VMS, LED, SIGNS

INTERCONNECTION GALERY



Conclusions

- ④ Enforcement by Traffic Police should be enhanced but it is not enough
- ④ Communication with the driver is the best way to avoid accidents & cost
- ④ The process is ongoing
- ④ Results will be presented in the following Congress

***Thank you for your
attention!***



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