ASECAP Road Safety Conference
Attica Tollway – How to retain a safe road environment in a busy urban motorway

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BRUSSELS, 21ST MARCH 2017
Centerline: 70Kms
Length: 140 Kms (bidirectional)
39 Toll Stations
195 Toll Gates (95 ETC capable)
12,5 km of tunnels and cut and cover sections (9% of length)
Daily Entries 2016: 210,492 veh/day
Operational characteristics

- Urban tollway. “Flat & open” toll system (manual & ETC)
- High traffic volumes, nearly at capacity levels during peak hours
- High speeds, frequently above limits, risky driver behaviour
- A “rich project” regarding infrastructure & equipment. Heavy workload for preventive & corrective maintenance.
- Suburban railway in the median. Interface & co-ordination needed for both operation & maintenance activities.
- High traffic volumes leave limited time windows for maintenance.
- Strict contractual obligations regarding response times (on accidents or damages & equipment failures) – response in 10’ after accident detection

Road worker safety is always our first priority
Equipment

- 22,000 lights (7,000 in open road + 15,000 in tunnels)
- 300 jet fans in tunnels
- 200 cameras for traffic + 200 for toll operations
- 100 Variable Message Signs
- 600 traffic counting stations (inductive loops)
- 600 Emergency Roadside Telephones
- 40 pumping stations for irrigation & fire protection
- 40 power stations (medium + low voltage)
Concession contract up to 2024 under supervision of the Greek state
O&M contract between Concessionaire & Operator
Approx. 1000 employees (tolls / traffic / maintenance / administration)
Approx. 250 employees working on traffic & maintenance
A) Traffic Management
   - Incident Management
   - Control and observation of traffic operation
   - Management of planned events
B) Maintenance (E&EM and Civil Works)
   - Preventive (periodic)
   - Corrective (damages + failures)
   - Inspections
   - Proposals for improvement and heavy maintenance
Monitoring the Road

State-of-the-Art Traffic Management Center (TMC) that controls Operations

- Through CCTV
- Through patrol vehicles
- Through inductive loops detectors
Driver & Vehicle Monitoring

- Info on vehicle condition from CAN-bus (speed, temperature, engine condition etc.)
- Info on driver performance (over speeding, aggressive driving etc.)
- Database on GIS, accessible over the web
Black spot analysis with GIS
Co-operation for Incident Management

INCIDENT DETECTION
By company personnel – external agencies – users – automatic means

TMC

FIRE BRIGADE AMBULANCES
TRAFFIC POLICE
RECOVERY UNIT
PATROL
INTERVENTION CREW
ON-DUTY OFFICER

ON-DUTY MANAGER

INCIDENT HANDLING
Patrol & Maintenance crews: Duties

- Patrolling on the road
- Maintenance works & temporary signage installation
- Detect and report to the TMC Operator any event detected on the motorway that endangers the safety of motorists
- Remove debris/obstacles detected on the carriageway
- Provide assistance to users with broken down vehicle
- Protect and sign the site of the incident to avoid further incident or secondary accident,
- Provide assistance to the Other Emergency Services (Police, Fire Brigade, Ambulance)
- Perform Inspections, detect, report to the TMC damages or anomalies on road infrastructure, furniture and equipment and provide, if possible, the first level repair actions

First Priority: their own safety
Variety of incidents
Key figures 2016

Traffic increase 4.3% compared to 2015
Traffic reduction 31% compared to 2009

- A total of 3,800,000 veh-kms travelled for patrolling
- Intervention in 22,124 incidents (average of 60 per day)
- Response time: 6.4 minutes on average
- Vehicle breakdowns 70% of total incidents (15,365 incidents)
  - Mechanical failure: 10,370 incidents
  - Flat tire: 3,056 incidents
  - Fuel: 1,939 incidents
- Accidents: 557 with damages only, 25 with injury, 2 fatal
- Debris: 2,842 obstacles collected
- Moving hazards: Mostly stray dogs (total of 660 cases) collected

Traffic police involved only in 1,159 out of 22,124 incidents (5% of total incidents)
Response Time (minutes) 2016

- AMBULANCES: 20.2 minutes
- FIRE BRIGADE: 12.8 minutes
- TRAFFIC POLICE: 11.2 minutes
- RECOVERY UNIT HGV: 19.4 minutes
- RECOVERY UNIT: 8.9 minutes
- ATTIKES DIADROMES: 6.4 minutes
Attica Tollway Accidents & Toll Traffic 2005-2016

- Number of Incidents
- Average Daily Toll Transactions

- 2005: 8
- 2006: 90
- 2007: 298
- 2008: 1244
- 2009: 101
- 2010: 10
- 2011: 9
- 2012: 70
- 2013: 9
- 2014: 3
- 2015: 3
- 2016: 2

Legend:
- Property damage only
- Accidents with Injuries
- Fatal Accidents
- ADTT
Fatality rate 2005-2016

Fatality rate (fatalities / billion veh-kms)
Asset Management

- Ageing infrastructure
- Need to plan heavy maintenance
- Need to formulate an effective & realistic traffic management plan during heavy maintenance activities

Road Inventory through GIS

Pavement Monitoring System
Pavement Monitoring System

- Laser Profiler: roughness – rutting – texture
- Grip Tester: skid
- Falling Weight Deflectometer (FWD): structure
- Ground Penetrating Radar (GPR): layer thickness
Conclusions: Contribution to Road Safety

Motorways under Concession contracts:
Positive and effective contribution in operations and road safety

• Continuous monitoring of road network & infrastructure
• Prompt response in case of damages / failures
• Faster detection and response time - prevention of secondary accidents
• Direct resolution of a large number of “routine” incidents before evolving and turning into major incidents
• Provision of new services to drivers (assistance, information)
• Improved coordination between the involved parties
• Exploitation and extensive use new technologies
• Saving resources and free up the state agencies and authorities to concentrate on their duties
Awards & Certifications

1st Prize European Road Safety Award 2005
International Road Federation (IRF)

ISO 39001:2012 on Road Safety
1st Greek Road Operator to Obtain ISO 39001 in 2014
Thank you!

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