

### 47TH ASECAP STUDY & INFORMATION DAYS

### Tomorrow's Mobility...Is Here Today!

Costa Navarino, Messinia, Greece 29-31 May 2019

MAINTENANCE OF HYDRAULIC WORKS AND GREEN
AREAS FOR THE SAFETY AND THE FUNCTIONALITY OF THE
ROAD AND MOTORWAY INFRASTRUCTURE

- Mr. Valerio MOLINARI

- Mr. Andrea RONDINARA

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COSTA NAVARINO 2019

Mr. Valerio MOLINARI

### THE IMPORTANCE OF THE MAINTENANCE OF HYDRAULIC WORKS AND GREEN AREAS FOR THE SAFETY AND THE FUNCTIONALITY OF THE TRANSPORT INFRASTRUCTURE









THE MAINTENANCE OF HYDRAULIC WORKS AND GREEN AREAS HAS A SIGNIFICANT IMPACT ON THE PRESERVATION AND THE FUNCTIONALITY OF BRIDGES, VIADUCTS, OVERPASSES AND THE TRANSPORT INFRASTRUCTURE ITSELF





### LACK OF MAINTENANCE OF HYDRAULIC WORKS ON MOTORWAYS











### LACK OF MAINTENANCE OF GREEN AREAS ON MOTORWAYS











### CONSEQUENCES OF THE LACK AND INADEQUATE MAINTENANCE









### WEAKENING OF THE LANDSCAPE AND THE INFRASTRUCTURE











### GREEN AREAS ON MOTORWAYS TECHNICAL PROPOSALS

- REQUIREMENTS IN THE PLANNING PHASE
  - ✓ Hydroseeding on slopes and embankments
  - ✓ Use of biodegradable erosion control blankets
  - ✓ Selection of the most suitable plant species for different areas
  - ✓ Use of Soil Bioengineering Techniques
  - ✓ Grass removal along the inner part of the shoulders
  - ✓ Installation of fences
  - ✓ Wildlife crossing structures
- IMPROVEMENT OF THE MAINTENANCE PLANS
- ✓ Use of machines and specialized personnel for grass mowing
- ✓ Increase of the workers and road users' safety







# PROJECT REQUIREMENTS Hydroseeding on slopes and embankments

















### PROJECT REQUIREMENTS

Biodegradable erosion control blankets and Soil Bioengineering Techniques

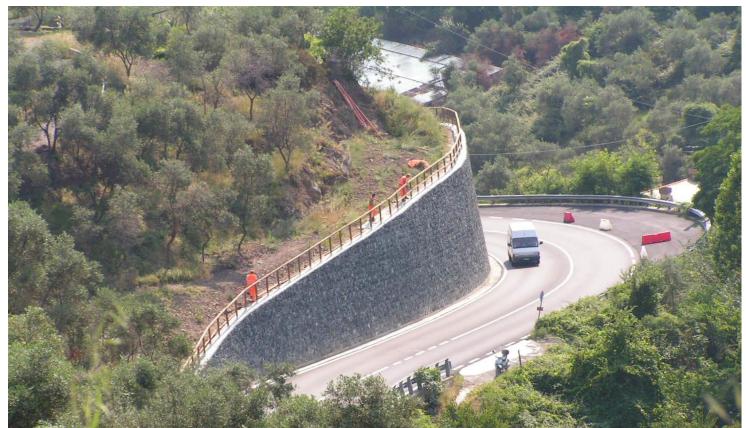






### **PROJECT REQUIREMENTS**

Use of Soil Bioengineering Techniques and reduction of the environmental impact











### PROJECT REQUIREMENTS Grass removal along the inner part of the shoulders





















## PROJECT REQUIREMENTS Use of fences









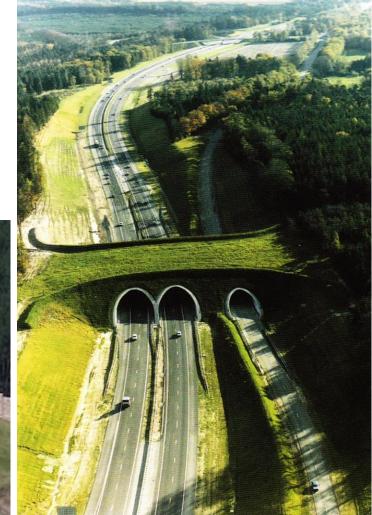




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# IMPROVEMENT OF THE MAINTENANCE PLANS OF GREEN AREAS ALONG THE MOTORWAY NETWORK









### Use of machines and specialized personnel











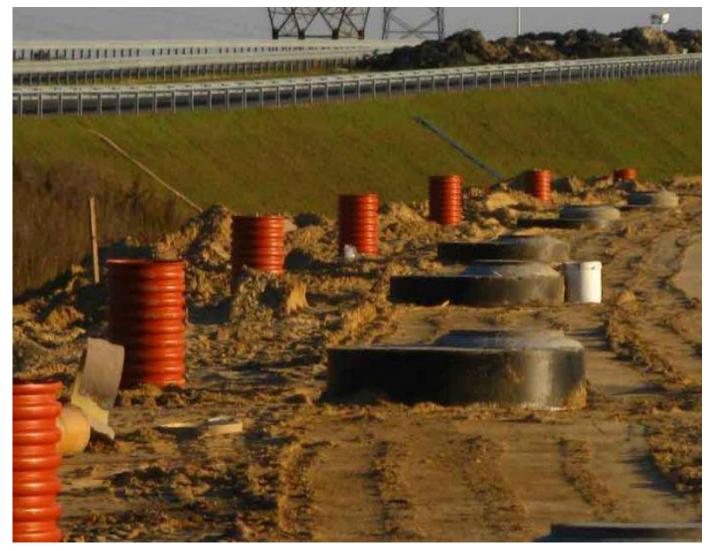


## SAFETY DURING MAINTENANCE WORKS









### HYDRAULIC WORKS ON MOTORWAYS

#### **TECHNICAL PROPOSALS**

- REQUIREMENTS IN THE PLANNING PHASE
  - ✓ Rainwater system
  - ✓ Vertical drainage systems
  - ✓ Rainwater storage tanks
  - ✓ Soil Bioengineering Techniques
- IMPROVEMENT OF THE MAINTENANCE PLANS
  - √ Hydraulic systems of embankments and trenches
  - ✓ Hydraulic protection systems of piers, abutments and manholes
  - ✓ Retaining walls and gabions
  - ✓ Cliffs and coastal areas





## PROJECT REQUIREMENTS Rainwater system and vertical drainage systems













## PROJECT REQUIREMENTS Rainwater storage tanks and Soil Bioengineering Techniques









## MAINTENANCE OF HYDRAULIC WORKS ON MOTORWAYS Hydraulic systems of embankments and trenches













## MAINTENANCE OF HYDRAULIC WORKS ON MOTORWAYS

- ✓ Hydraulic protection systems of piers and abutments
- ✓ Retaining walls and gabions













# MAINTENANCE OF HYDRAULIC WORKS ON MOTORWAYS ✓ Manholes













### CORRECT CONSTRUCTION AND MANAGEMENT OF HYDRAULIC WORKS



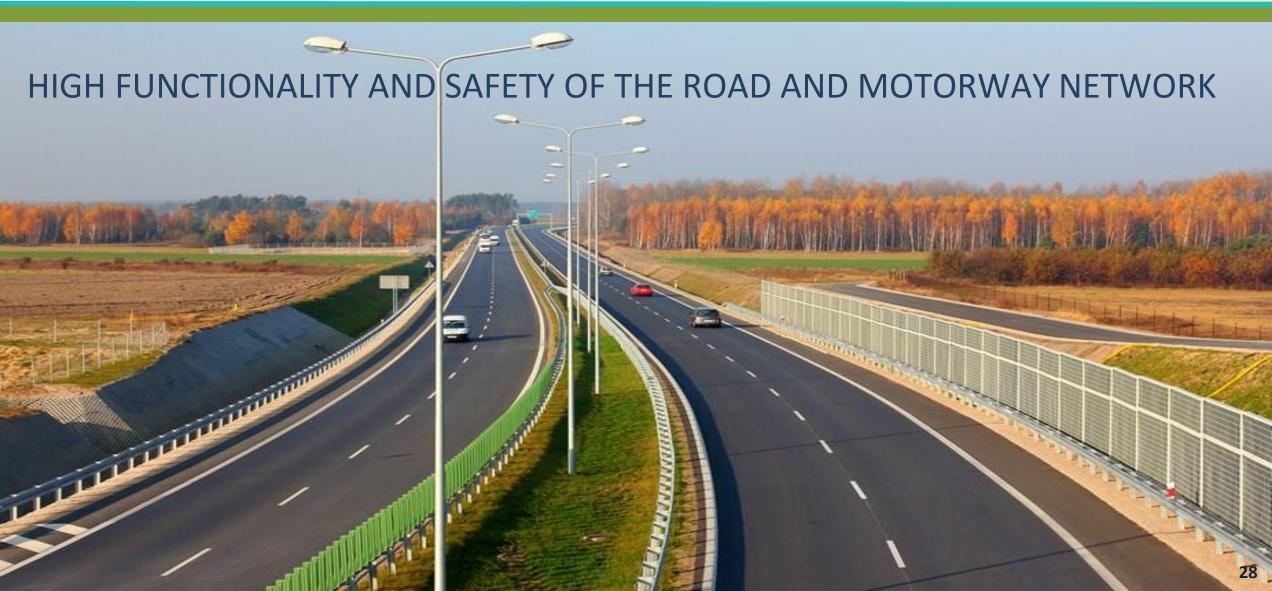
















### THANK YOU FOR YOUR ATTENTION

The environment, our best customer

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