Landscape, Archeology, Culture

When something is built in a particular landscape, whether this is ordinary or particularly attractive, the scene changes and a new visual environment is created. Roads are no exception to this rule and, in order to ensure the best result, 3D computer modelling is used from the earliest design stage. But there is also a special factor which should always be stressed: a new road frequently enables its countless users to approach and discover the special features of the territory, such as archaeological sites or specific places of cultural interest. Toll motorways concessionaires are proud to re-discover sites once segregated because of changes in itineraries and help link them again, as well as adapt their motorways to archaeological sites, made available to the public thanks to their efforts.

Territorial Links

To enable wild animals to cross the carriageways and thus reduce the biological cut-off effect, the toll motorway operating companies introduce facilities such as dedicated bridges or tunnels. Thus, of all road managers, the toll motorways companies appear particularly concerned to meet the requirements of wild fauna.

The smallest animals also get special attention. Similar crossing facilities are built for otters, reptiles, amphibians, and so on. Replacement ponds have been specially created to replace those to which amphibians no longer have access.

Air Quality

Although in terms of air quality and greenhouse effect most attention is usually focused on the urban environment, the interurban motorways and specific links are also involved, at their own level. Because of their special characteristics, motorways or bridges have a definite advantage over conventional roads or, as for some waterways crossing, energy consuming boats.
The route geometry has a decisive effect on vehicle fuel consumption and hence on atmospheric pollution and, in waterways crossing, the energy balance is very positive.
The particular configuration of motorways (separate carriageways, slip roads for acceleration and deceleration, the absence of intersections, gentle and regular gradients, and bends with a large radius of curvature) all favour the steady movement of vehicles and free-flowing traffic; all these factors lead to better energy efficiency and therefore to lower emissions, assuming of course that average speeds are not excessive.

Green Belts

On the average, building one kilometre of motorway occupies an area slightly over 10 hectares.
This area can be broken down schematically as follows:

- paved areas (carriageways, hard shoulders, access roads, toll plazas, parking zones and buildings): about 3 hectares,
- technical zones (including highly artificial landscaped areas): a little under 3 hectares,
- secondary landscaped areas (verges, embankments, banked ditches, extra wide verges, unused strips, central reservations, and planted zones at service or rest areas and toll plazas): a little over 4 hectares. Accordingly, the motorway network encompasses nearly over 40% of green areas.

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ASECAP Mission

ASECAP is the European professional Association of Operators of Tolled Road Infrastructures.
It gathers and represents 121 organisations that manage a toll network of over 23,000 km in 16 countries.
ASECAP's mission is to promote toll as the most efficient tool to finance the construction, operation and maintenance of motorways and other major road infrastructures.

ASECAP and its members are committed to:

exchanging information and experience, participating in research programmes and further developing and enhancing the direct "user payer" toll system as an instrument of a sustainable, safe and environmentally friendly transport policy;

strengthening the efficiency of their networks and permanently improving the level of service provided to the European citizens, by keeping up with the latest technology developments and the best operational practises.

ASECAP for the Environment

The environment is an essential factor in sustainable development; this is why ASECAP and its members are strongly committed to the subject. This leaflet highlights some of the efforts that the Operators of the European Toll infrastructures devote to environmental issues.
A major part of the existing European tolled network is of recent development, consequently taking advantage of the most state-of-the-art environmental protective solutions, often even more advanced than existing legislative provisions.
Furthermore, the environment is the subject of a number of studies and actions aimed to optimize the added value that the infrastructure brings to drivers, the territory and its inhabitants, whilst mitigating negative impacts, if any.
Respectful of nature and cultural values, the toll infrastructures set new and higher reference standards, in terms of accessibility, safety and environment, improving the quality of life for users and the community.
The European toll infrastructures system is constantly improved and progressively extended and all such improvements are carried out with careful respect to the environment in order to minimize the impact on the human environment.
Whilst preserving natural resources, environmental sustainability plays a major role in all phases of toll infrastructures development and operation.
This leaflet shows through small sketches and examples, how ASECAP members deal with this important subject.

to be continued on www.Asecap.com...

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ASECAP

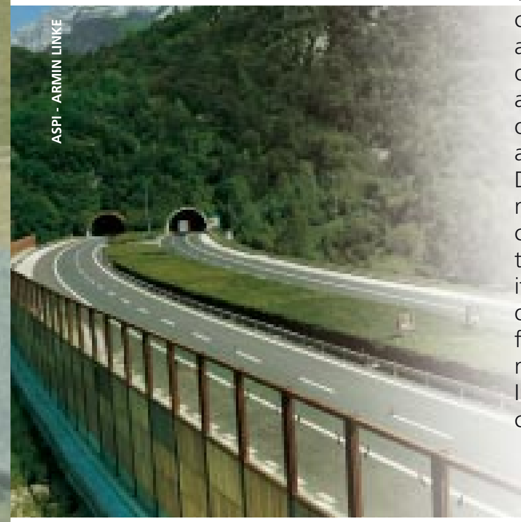
ENVIRONMENTALLY COMMITTED EUROPEAN TOLL INFRASTRUCTURES

ASECAP
Association Europeenne des Concessionaires d'Autoroutes et d'Ouvrages à Péage

ENVIRONMENT & MOTORWAYS...

issue by issue

Noise



ASPI - ARMIN LINKE

The toll infrastructure operating companies give noise protection an extremely high priority. Prevention of noise problems starts at the planning and design stage, where state of the art knowledge is used for securing a good environment for citizens.
During the construction phase the efforts made by the motorway concessionaire companies strongly appear. In particular, they result in a careful layout of the road itself and whenever necessary the erection of noise screens and embankments, fitting into the local environment so to minimise even their visual impact.
In special situations, the motorway companies have also introduced draining asphalt - originally aimed at a safer driving - the benefits of which in reducing traffic noise have gradually become clear. Special "noiseless" asphalts with increasingly good acoustic qualities are now available to add to the range of anti-noise measures used.
Securing the lowest possible noise level is however not only a task for the road operators, also the drivers and car owners have a very important role. The speed, the size of cars, the type of tires and many other factors have an influence on how neighbours feel the presence of traffic.
The toll infrastructure operators are interested in finding the optimum solution for reduction of noise in close dialog with the users and the neighbours.

Biodiversity

In order to ensure the preservation of the original characteristics of the territory, preliminary field studies can precisely identify the plant groups and animal populations along the chosen route.
Based upon detailed knowledge of local flora, the species to be planted are identified according to a number of criteria: the particularities of local climate and soil, plant compatibility, and the landscape.
This approach ensures that local plant species are always preferred, since they are better adapted to the local environment and encourage the development of local fauna.
The arrangements for the green verges along stretches of motorway under construction have also been rethought in detail. Once major works ends, the planting operations are carried out with great care in order to ensure rapid and permanent re-growth of plants.
Special precautions are taken in choosing the plants to be sown or planted. Planting contracts are prepared with local producers several years in advance, with a view to acquiring local species that are not always available on the market. Rescue work, often involving ecological engineering techniques, is also carried out where the construction process could threaten rare animal or plant species,.
The green verges along motorways also have a buffering and filtering function in protecting nearby areas from traffic emissions. Research has shown that emissions of exhaust gases, dust, salts, hydrocarbons and heavy metals were trapped in the immediate vicinity of the roadway, in the verges.

Water

The development of new motorways is often an occasion to check and re-design water management in the territory, in order to protect underground drinking water reserves, wetlands and rivers, or to reduce the risk of flooding. The measures taken proved to be effective since, despite the incredible variety of products transported on motorways and the enormous number of watercourses and wetlands traversed, the incidents that have occurred, whether accidental spillages or interference with the escape of floodwater, have never had any real impact on ground water, according to the periodic reviews to which toll motorways are subject.
This situation is not a matter of chance: firstly, toll infrastructures are safer than conventional roads and thereby contribute to reducing the risks involved in the carriage of dangerous goods, and in addition the operating companies take very great precautions as regards anything concerning water in the development and management of their infrastructure, as for example minimising the use of de-icing materials in order to protect the environment and still obtain maximum safety for the traffic.

European Environmentally-Conscious Toll Infrastructures

Environmentally-Conscious Motorways

As far as the toll infrastructures operators are concerned, the environment is the subject of a multiplicity of studies and actions aimed to maximize the added value that the infrastructure gives to the territory and its inhabitants, while minimizing all the negative impacts.

1 Preserve natural waterways

The original water flowing paths are respected and preserved by means of specific passages whenever possible, to prevent any unforeseen damage to the territory.

2 Let the fauna crossing available

Local fauna habits are not disrupted by modern motorways, since design includes also analysis and preservation of existing paths between the motorway sides.

3 Protecting and enhancing local species

Controlled and maintained with very high frequency, the motorways green belts are natural ground for control, implant and enhancement of local species, under very good conditions.

4 Preventing danger to wildlife

Since motorway traffic can constitute an actual danger for wildlife, protection nets and other features are used to prevent animals from entering the paved space or other potentially dangerous facilities.

5 Promote natural local vegetation

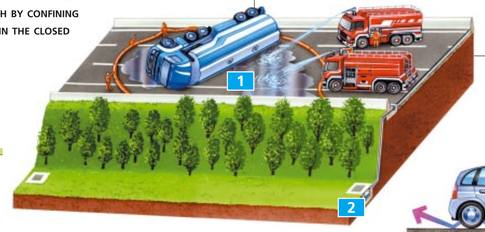
Specific studies are performed on local vegetation, in order to keep the green areas coherent with the territory and to use the motorways green space as a mean to promote local flora.

6 Recycling construction material

Materials for construction and maintenance are carefully selected, in order to prevent waste, and often recycled, either on site while maintaining or with material coming from other dismissed infrastructures

Operating for Environment Safety

Once the motorway is ready and open to traffic, attention has to be paid to dangers from traffic and accidents. Spillage of pollutants is dealt with by confining the liquids, at any event directed in the closed waste liquids treatment system, and by intervening on-site with appropriate techniques of neutralization.



1 Neutralizing on-site

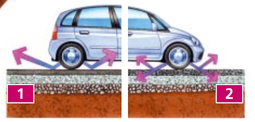
Emergency teams are trained and equipped so as to direct the spilled materials and neutralize them with the most appropriate means. Special emergency vehicles are available, as well as traffic control centers that are in charge of co-ordinating the distress calls.

2 Dealing with spillage

Spilled liquids must not enter in contact with surrounding natural soil. To this end all the waste water is directed to ditches, where it can be controlled and treated.

Advanced Technologies for Water Treatment and Noise Abatement

Dealing with the water is a double faced problem, that affects also traffic noise. Extensive use of drainage pavements - where the superficial layer is porous - allows for water layer and consequent spraying reduction, with a very positive effect on visibility and safety. Water is eventually directed to proper ditches and treated, since it contains pollutants. A side effect of drainage pavement is the noise abatement, due to the particular wheel - pavement interaction.

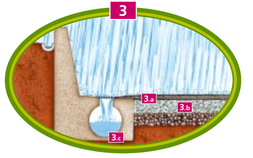


1 Noise by conventional pavement

Noise is a by-product of the wheels-pavement contact. In the conventional, impermeable pavements, all the sound waves are reflected, so that the whole noise is directed to the surrounding environment.

2 Drainage pavement effect

Rolling on a drainage pavement, part of the noise is not reflected, but absorbed by the pavement, thus reducing the annoyance. By the way, the majority of pavement materials are recycled and re-used by means of advanced technologies.



3 a Surface lets water pass

The porous drainage surface let water pass, reducing the water on the surface.

3 b Ditch

The ditch gathers all the wastewater, that is treated before it has contact with the environment.

3 c Impermeable layer

The impermeable layer brings the water to the ditch.

Caring about Citizens

Taking into account the neighbouring citizens, the impact of the infrastructures is to be minimized. A wide range of solutions are used to protect local communities and ensure healthy and safe living in the areas crossed by the motorways.

1 Green cushion belts

As natural pollution and noise abating means, green belts are created to protect local communities from disturbances by the motorway traffic.

2 Special-featured sound barriers

Where local conditions makes it necessary, high efficiency, sound barriers are put in place to further abate noise, preventing also harm to small birds by means of special birds of prey shapes on transparent surfaces.

3 Dealing "naturally" with the slopes

Landscaping and environmental engineering techniques are used whenever possible to ensure the stability of slopes, instead of artificial constructions.

4 Landscaping included in design and contruction

Integrated in every phase of motorways planning, landscaping is not a separate or added activity, but rather a fundamental part of the motorways design and construction.

Helping the Cultural and Territorial Heritage

Showing the territory

Secluded or neglected towns, interesting sites and landscapes are brought to new life, thanks to special links from the motorways.

Link people and cultures

Service areas, information posts, are also used to put the users in contact with local culture and products, serving as territory promotion tools.

Revaluate and protect archaeological sites

Often archaeological sites are discovered during construction and preserved by toll motorways operators allowing motorway users to stop and visit them.