

ROAD TO SUCCESS



A2 MOTORWAY ŚWIECKO – NOWY TOMYŚL



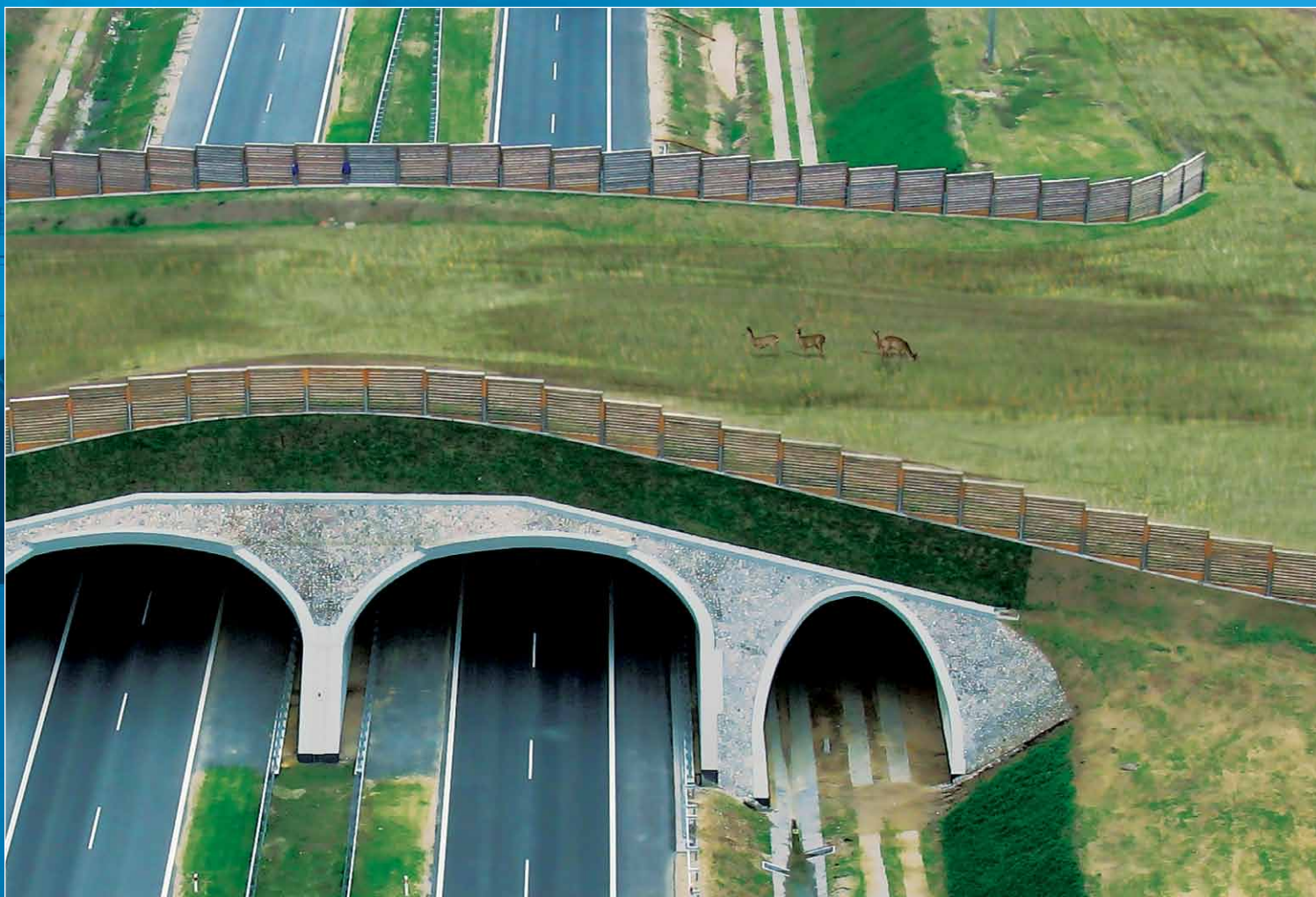
Map of the Świecko - Nowy Tomyśl section



A2 motorway

The A2 motorway runs latitudinally through central areas of Poland. It is one of the most strategic parts of the Polish motorway construction plan. By direct connection to the network of German motorways it became the key transport route between Poland and Western Europe.

The newly opened section, which connects in Świecko with the A12 German motorway: Berlin - Frankfurt (Oder), has become a part of a strategic European transport route: Berlin - Warszawa - Minsk - Moscow.



A fragment of the A2 Konin - Koło motorway - WE-151 animal overpass, km 265+350

The Świecko - Nowy Tomyśl section of the A2 motorway was opened on 1 December 2011. The contractor for this investment was STRABAG Sp. z o.o., while the main concessionaire was Autostrada Wielkopolska S.A. In connection with the fact that this section of the motorway runs in 85% through forest areas, including Natura 2000 protected sites, it was an engineering challenge to carry out the project with the utmost care for the environment.

Nowadays, there is no need to convince anyone that it is necessary to build wildlife crossings, as many animal species are endangered by progressive fragmentation of habitats. Modernization of old roads and construction of new ones become increasingly important barriers to animal migrations. In order to ensure the survival of animals, the most important issue is to try to maintain and even gradually improve the continuity of forest habitats and provide opportunities for animal migration by designating ecological corridors and protecting them.

Thanks to the fact that already in the design phase it was assumed that all European environmental standards would be adopted, the opened section of the motorway is one of the most environmentally friendly infrastructure projects in Europe. Expenditure related to the environmental protection accounted for 25% of the entire investment costs. Nearly 200 wildlife crossings and underpasses for large and small animals have been built along the 106 km long section of the motorway.

SuperCor® and MultiPlate MP200 corrugated steel plate structures

ViaCon Sp. z o.o. had a very large contribution to the construction of the A2 motorway. Our company delivered and assembled corrugated steel plate structures for construction of 13 wildlife overpasses.

11 of them have two spans, one has three spans and one four spans. **SuperCor®** and **MultiPlate MP200** corrugated steel structures were used for this purpose. **SuperCor®** structures are arch-shaped and have a span of 17.67 m and a height of 5.46 m. They are placed on reinforced concrete supports. The motorway runs under these structures. The bottom length of **SuperCor®** steel structures ranges from 39.70 m to 75.51 m.



MultiPlate MP200 structures are used to pass service roads. They have a closed shape with a span of 8.66 m and a height of 7.54 m. Their length ranges from 39.70 m to 54.94 m.

One of important requirements set forth by the investor was to ensure a minimum 100-year durability of the animal overpasses.

This was achieved by protecting the steel structures by hot-dip galvanizing with average thickness of the coating: 105 μm (a minimum thickness of 90 μm), and additionally, from the surface exposed to air was painted. Total thickness of paint was min 200 μm and this coating was performed in two layers

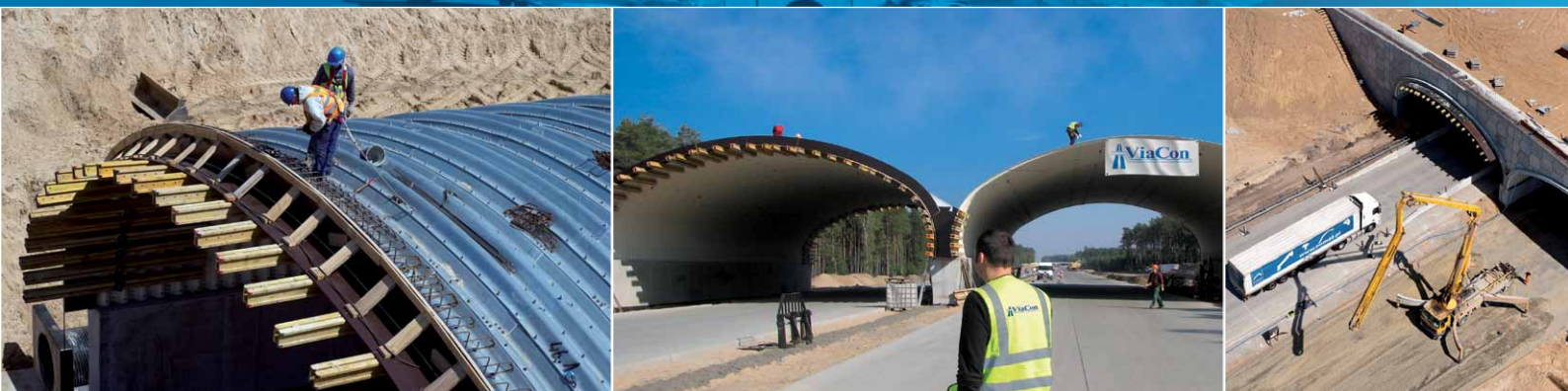


– 120 µm of the epoxy and 80 µm of polyurethane paint. The colour of the coatings was selected in such a way as to make the colour of the inner surface fully consistent with RAL 1013 in order to light up the interior and at the same time improve the safety of the travellers. The colour of the epoxy and polyurethane coatings was selected in such a way as to make the colour of the inner surface fully consistent with RAL 1013 in order to light up the interior and at the same time improve the safety of the travellers.

Steel structures were assembled using the plate-by-plate method combined with and the partial preassembly. The corrugated steel plate structures were covered with a gravel and sand mix. The height of the cover over the **SuperCor®** structures ranges from approx. 1.80 m to 2.35 m. Over the steel structures there was laid an „umbrella” that protects them against possible penetration of storm water into the interior. Width of the overpasses measured in the axis of motorway between fences varies from approx. 38 m to over 63 m and reaches 120 m in the base of embankment.

MSE retaining walls with reinforced concrete panels have been foreseen for facilities with square ends. Slopes of facilities with bevelled ends were finished with a rip-rap on a cement and sand bed. Inlets and outlets of all structures were strengthened with reinforced concrete collars. The facilities were fitted with screening greenery and anti-glare screens were built on edges of passes.

In the most intense period, the assembly was performed by 5 assembly crews. Assembly crews consisted of 7 people, the average time of assembly of one structure was 4 weeks, and the entire task was completed in just 14 months (from April 2010 to May 2011).



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a part of a strategic European transport route:
Berlin - Warszawa - Minsk - Moscow

A2



SuperCor® corrugated plate structures and ViaWall A type 1 MSE walls in the WD-69a animal overpass



SuperCor® corrugated plate structures in the WD-3c animal overpass



Assembly of SuperCor® corrugated plate structure in the WD-69a animal overpass



Visit to the WD-63a animal overpass



SuperCor® and MultiPlate MP200 corrugated plate structures and ViaWall A type 1 MSE walls in the WD-69a animal overpass



SuperCor® corrugated plate structures in the WD-63a animal overpass



SuperCor® corrugated plate structures in the WD-3a animal overpass



Assembly of SuperCor® corrugated plate structure in the WD-10a animal overpass



SuperCor® corrugated plate structures and ViaWall A type 1 MSE walls in the WD-10a animal overpass

HelCor®

In the period from 2009 to 2011 ViaCon Sp. z o.o. manufactured **HelCor®** and **HelCor PA®** helically corrugated pipes, protected against corrosion with zinc coating with a thickness of 42 µm and additionally with polymer coating with a thickness of 250 µm, and delivered them to the construction site of the Świecko - Nowy Tomyśl section. **HelCor®** and **HelCor PA®** pipes were designed as culverts and wildlife underpasses under the motorway and under access and service roads.



Parameters and the total number of HelCor® pipes:

- diameter: Ø600 mm, 2.0 mm sheet metal - 87.0 m
- diameter: Ø800 mm, 2.0 mm sheet metal - 316.0 m
- diameter: Ø1000 mm, 2.0 mm sheet metal - 294.0 m
- diameter: Ø1200 mm, 2.0 mm sheet metal - 266.5 m

Parameters and the total number of HelCor PA® pipes:

- dimensions: 1440x970 mm, 2.0 mm sheet metal - 1,374.84 m
- dimensions 1950x1320 mm, 2.7 mm sheet metal - 2,211.41 m



Geosynthetics

Geosynthetics, apart from other materials, were used for construction of the concrete pavement. Under the concrete pavement layer, a lean concrete base course with a thickness of 20 cm was laid on the prepared frost-protection layer with a thickness of 32 cm.

Non-woven polypropylene geotextile with a mass weight of 450 g/m², performing the role of a separating layer, was laid on the lean concrete base course. The non-woven geotextile separates the rigid lean concrete base course from the pavement and prevents the propagation of possible cracks on the base course layer to upper layers of the pavement.

In total, 2.5 million m² of **Bonar VNW450 PP-K** non-woven geotextile and **Geo&tex2000 GEO RPPAG 450** non-woven geotextile were laid in the entire Świecko - Nowy Tomyśl section of the A2 motorway. This geosynthetic is resistant to alkalis. Additionally, it is characterized by high hydraulic and mechanical performance.



ViaWall A type 1

ViaWall A type 1 MSE retaining walls were used in the WD-69a, WD-65a, and WD-10a animal overpasses. Vertical retaining walls were built on both sides of the passages between the **SuperCor®** and **MultiPlate MP200** corrugated plate structures. Approx. 3000 m² of walls were built in these three facilities, and their maximum height reached 10.5 m.

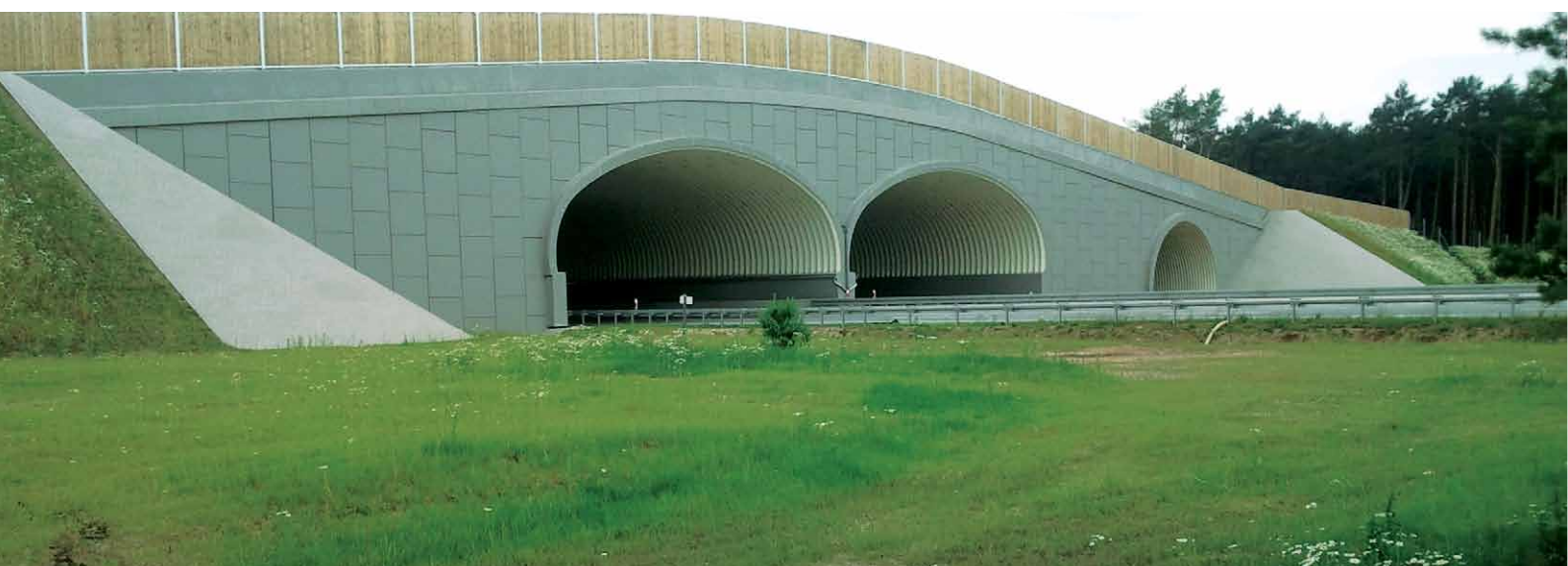
The walls were covered with non-cohesive soil with an internal friction angle of at least 34°, compacted to the degree of compaction: $I_s \geq 0.98$ (according to the standard Proctor test).



Panels were made of reinforced concrete, class C 30/37, with dimensions of 1.5 x 1.5 x 0.15 m.

Soil reinforcing grids were made from steel bars with diameters ranging from 8 to 12 mm, welded and hot galvanized. The lengths of the grids varied from 4.55 to 8.15 m. Additional elements necessary for the assembly included EPDM bearings, as well as non-woven separating geotextile in the form of belts with a width of 40 cm, which covered the gaps between panels from the side of the cover.

The walls were painted and topped with a monolithic cornice.



Some of the photos for the catalogue were taken from the website of Autostrada Wielkopolska S.A.



ViaCon Sp. z o.o.

ViaCon Sp. z o.o. is a member of ViaCon Group established in Sweden and Norway in 1986. At present ViaCon Group operates in a dozen or so European countries and belongs to SAFEROAD® Group. Thanks to the support from the entire group and the possibility of using the shared experience, each member company can offer professional technical consulting and top quality products.

Business profile of the company:

- manufacture, design, sale and installation of plastic and steel pipes and flexible structures used for construction and repair of culverts, bridges, overpasses, tunnels, farm accommodation underpasses, wildlife crossings, other engineering structures, and used also as belt conveyor housings,
- manufacture, design and sale of storm water drainage systems and holding tanks,
- design, sale and installation of geosynthetics, such as non-woven geotextile fabrics, woven geotextile fabrics, geogrids, geomembranes, and bentonite mats,
- sale and lease of temporary bridges,
- sale of gabions,
- design, manufacture and sale of three retaining structure systems from reinforced soil.





PECOR OPTIMA®



HelCor®



HelCor PA®



MultiPlate MP200



SuperCor®



Acrow® 700XS® - temporary bridges



Woven and non-woven geotextiles



Geogrids



Gabions



HelCor® TC holding tanks



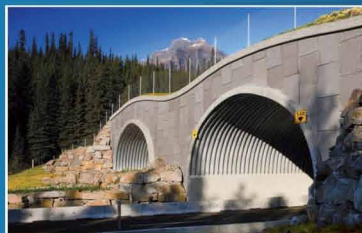
HelCor® wells



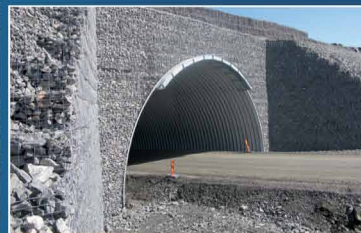
Pecor Quattro sewage system



PECOR OPTIMA® M wells



ViaWall A retaining walls



ViaWall B retaining walls



ViaBlock retaining walls



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Our goal is to improve products and to cooperate closely with customers, scientific and research centres, public administration and suppliers.

That's why our motto is:

"Let's Create a Better Future Together"