

AESTHETICS OF BURIED STEEL STRUCTURES PRESENT AND FUTURE¹

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This paper describes aesthetic aspects of the construction of corrugated steel plate structures. Aesthetically made objects from Europe are presented. Some of them were built in the old town areas, in parks, and under roads. Particular attention is paid to the future, how to change a simple design into a work of art using modern technology of illumination and architectural knowledge.

Key words: aesthetics, illumination, corrugated plate structures;

1. INTRODUCTION

A well-designed object is characterized by three basic features: durability, utility and beauty (firmitas, utilitas and venustas, Vitruvius, I c. BC).

Why designing beautiful objects is not easy?

Aesthetics is the science of sensory perception, sensuous cognition of reality. Its assessment depends on the aesthetic perception of the recipient, because for each of us beauty means something else.

Therefore, aesthetics of engineering structures are associated with feelings of higher order, and their assessment depends on the individual sensitivity of the recipient, that is why, it is an entirely subjective category.

What kind of responsibility does the designing entail?

Structures create spaces in which we live, they affect our well-being in a particular place. These objects are often treated as landmarks when traveling, they are recognizable. Thus, their construction is an art to which we should pay particular attention, because they become permanent elements of our environment and impact it throughout many years of use. The feeling of aesthetic remains in our memory the longest.

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2. THE SEARCH FOR THE GOLDEN MEAN

The technology of building bridges with corrugated plates around the world is similar. What distinguishes objects from each other are their aesthetics. Typically, most attention is paid to finishing inlets and outlets, much less importance is attributed to finishing objects' interiors, or to seamlessly integrate them in a harmonious way with their surroundings.

Such an approach entails additional costs, which are often considered unnecessary. The main and most important aspect of an object is the load capacity of its construction, and the first step to optimize the cost of the investment is to get rid of "unnecessary" details.

Object's embankment must be strengthened to make it look pleasing and fulfill its function well. Strengthening of the embankment can be accomplished in many ways. The old and easiest way was to plant grass seeds or lay sod, or to plant other plants performing similar functions. In most cases, the embankments were strengthened in a natural way, leveled and covered with turf.



Fig 1. Waliszów, Poland year 1998



Fig. 2. Żmigród, Poland year1999

Such an approach is mainly due to pure economics, however, it should be noted that there are places where a solution that does not intervene too much with the natural environment is especially appropriate, these are national parks, forests and other green areas with unspoiled landscape.

Designing in the areas of natural landscapes is a huge challenge. It requires a lot of tact and sensitivity. Anyway, there are methods of realization of engineering structures that require greater invasion into the existing state, giving phenomenal effect, while preserving proper respect for the environment. As a result, we achieve the effect of the wonderful interplay with the natural landscape.



Fig. 3. Rospuda Valley, Poland, year 2015



Fig. 4. Austria



Fig. 5. Cisna, Poland

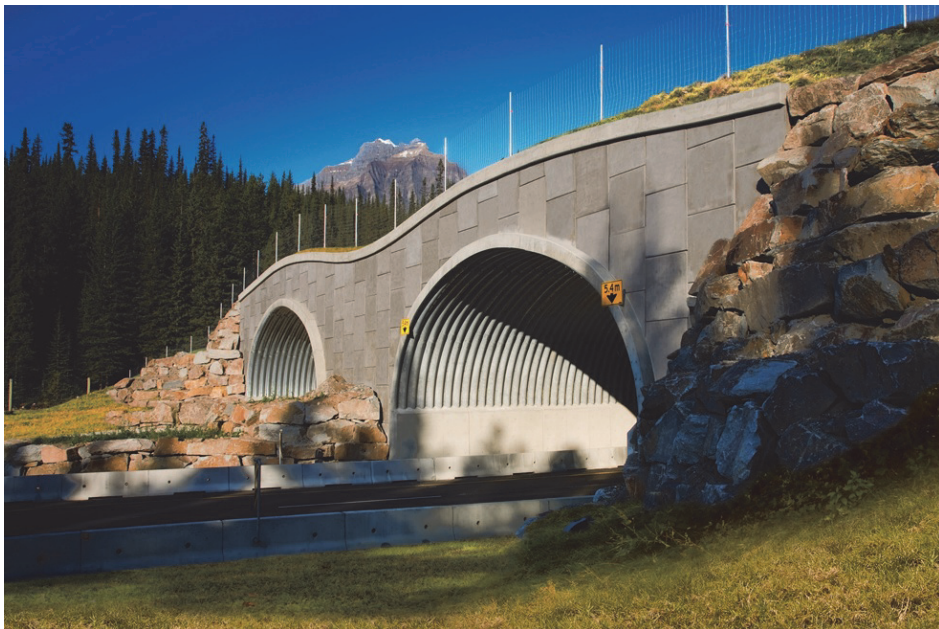


Fig. 6. Rocky mountains, Banf Canada

Each structure, either due to its functionality, content or design, should be adapted to the environment, it is unacceptable to degrade the environment.

There are two methods of designing: the subject may raise the aesthetic value of the place in which it is located, or it can smoothly fit in with the environment.

The first method is a great challenge, it is extremely difficult to design an object that is dominant in a peaceful landscape.



Fig. 7. Konin, A2 Motorway, Poland year 2004

The animals overpass located on the A2 motorway is an example of the dominant object. The size of this object makes it dominate the environment, even though it fits in it smoothly.

Definitely, a safer way is to make the design compatible with the environment, using the method of gentle fit.

Despite the advanced technology and the clear cutting of the object from the materials from the environment (photo 10), the object remains in harmony with its surroundings. This effect has been obtained thanks to the skilful selection of colors.

The way to achieve the effect of a well-designed object is to combine the efficient design with the appropriate finishing details, as well as the selection of appropriate materials and colors.

Professional, aesthetic finish of the embankment, in which abutment is located, may be important in assessing the overall appearance of the object.



Fig. 8. Suwałki, Poland 2006 year



Fig. 9. Lithuania, 2008 year



Fig. 10. Zakręty, Poland 2015 year

A great example of it is the construction in Wloclawek by the river Zgłowiączka. Balanced proportions, brave but careful selection of materials and subdued colors, all of this adds up to a positive perception of the object.



Fig. 11. Zgłowiączka, Poland 2013 year

We can effectively fight the emptiness on large surfaces (cones, embankments) by the refracting planes, dividing simple elements into several smaller modular blocks.

Sometimes the details are only minor accents, but many times this influence can not be missed. A very good example of taking care of detail is the construction of the objects on the A2 motorway section Konin – Koło in Poland. In a subtle way the line of the cornice was broken. This small change alone added a completely new meaning, and so our feelings have been enhanced.



Fig. 12. A2 Motorway section Konin – Koło Poland 2004 year

Another very important aspect in the design and construction engineering is to respect the historical value. Communing with historic architecture liberates a number of different emotions and sensations within us. Most commonly such objects impress with richness of ornament, details, or scale. The situation is similar in the case of bridges. Projects which are bringing the former glory to the old object deserve highest praise. Below we present projects made with extraordinary skill and taste.



Fig. 13. Błonie, Poland 2014 year



Fig. 14. Australia

One of the most important elements in designing good objects is the awareness of the context and place. An object beautifully blending into the environment, referring to the buildings existing in the surroundings, causes liberation of positive aesthetic experience. A successful example of such design is the project built in Kościelec in Poland. Engineer, when designing embankment and front, took into consideration the nearby church. By doing so, the effect of structural integrity of the building with the surrounding environment has been obtained. The newly designed object seems to create a whole and unanimity with the church tower.



Fig. 15. Kościelec, Poland 2011 year

Since the light always constitutes the reception of impressions, the game of light undeniably evokes in us feelings of peace, harmony, or, conversely, fear and uncertainty.

A very interesting solution is to use the play of light in contemporary constructions. A great example of using light to enhance the aesthetic qualities of the place is the object over a bicycle path located in the Netherlands.



Fig. 16. The Netherlands, year 2010

This is an object tailored to our era, we can clearly feel the combination of technical thought of engineering with a touch of art.

3. SUMMARY

How to design in order to generate positive aesthetic experience in the recipient? How do change a simple design into a work of art?

The design process should strive to achieve the harmony, symmetry and order, while preserving proportions and simplicity. The more complicated the form of the object is, the more difficult for the observer it is to see the in its entirety. Keeping moderation and balance in size design, form, and color is obligatory. The challenges of building bridges relate primarily to ensuring the safety of construction, material and spacial requirements. Therefore, the engineering require to do what is practical and useful, but at the same time sublime and beautiful.

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