

## ENGINEERING KNOWLEDGE IN ANCIENT PALMYRA

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### SUMMARY

Development of Palmyra's architecture is an interesting example of the changes which took place in construction techniques and their application. These changes resulted from an individual approach to ancient Greek construction technique introduced at the beginning of the 1st century AD, employed in the construction of the great Temple of Bel. A complex analysis of the ancient buildings explains factors that influenced a building technology adopted for erection high tower tombs, walls and columns in a fast and easy way, as well as describes a specific approach to construction of arches and vaults in Palmyra.

**Keywords:** *Palmyra, Building Technics, Arches.*

### 1. INTRODUCTION

In general opinion, development of a construction and building techniques is a mutual result of architectural challenges full-filled by engineering knowledge, as well as by application of a proper materials. Synergy of those elements had been a creative factor forming new solutions and possibilities in a building engineering. Practice of new solutions assured perfection of form and structure. Good example here be a comparison of two monumental buildings: Pantheon and Saint Sophia church in Constantinople. It would be an easy task for Byzantine architects to follow a great dome structure as it was completed in Rome, but Artemius and Isidor, wanted to construct Saint Sophia differently, despite numerous problems and collapse of the first structure. Due to such situation engineering knowledge enlarges and confirms a great intellectual expectations of a Man. Our scientific approach to ancient architecture omits an intellectual aspect of a building processes focusing our interest to an architectural form and grandiose scale of ancient constructions. Heritage of Antiquity consists not only of a great spectacular monuments, but also of an intellectual aspects of a building knowledge, being fundamental and crucial in engineering progress. For a present day visitor ancient buildings were constructed by mighty builders, who got their knowledge from previous generation. Knowledge transfer is explained by present day cliché that a new building systems can be easily adopted and possessed. Till now, Palmyra monuments were recognized as a built in a classical Greco – Roman style following generally used building techniques [1, 2]. Facts are slight different. Palmyra is an interesting example of a building techniques development, where local builders invented a new solutions and perfectly adopted properties of a local stone.

### 2. LOCAL BUILDING TECHNIQS IN PALMYRA

Palmyra oasis, an isolated town on a desert faced a limited access to water and wood. These factors formed a local building technique. From the other hand Palmyra was a reach town of an independent status to imperial Rome. The control over the trade routes between the East and the Roman Empire brought enormous wealth to the inhabitants of the city. Its fast growth and architectural development were result of a great expectations and an ambition of a small community to be equal with other great centres of the ancient World. To some extend it reassembles a present day situation in many Arabian countries, able to buy a ready products and top technologies to build a tallest buildings. However building a great Bel temple in Palmyra was completed with knowledge and skills of a foreign masters, a further developments in a local building techniques were result of individual approach in order to build faster and in more economical way.