Engineering in Ancient India, A Study of Lesser-Known Indian Construction Techniques and Their Structural Integrity

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Abstract:

This study delves into the diverse and sophisticated construction techniques of ancient India, which reflect a deep understanding of engineering, materials, and sustainable practices. From the robust sand box technique used in temple foundations to the intricate jali technique that ingeniously balanced ventilation and light, these methods highlight the ingenuity of early Indian builders. The research aims to analyze techniques such as corbel arch construction, Kath-Khuni architecture, lime mortar applications, and stepwell construction, emphasizing their structural integrity and environmental adaptability.

By employing a multi-disciplinary approach that integrates archaeological evidence, historical analysis, and modern engineering principles, this study provides a comprehensive understanding of how these ancient practices were shaped by local resources, cultural values, and climatic conditions. Field studies, literature reviews, and expert consultations contribute to an in-depth exploration of techniques like Vastu Shastra principles, granite dome construction, and dry stone masonry. Additionally, the research highlights the sustainable aspects of these ancient methods and their potential application in contemporary eco-friendly architecture.

The findings reveal that ancient Indian construction was not only about creating monumental structures but also about promoting durability, resourcefulness, and harmony with nature. This study underscores the relevance of these time-tested practices and advocates for their integration into modern architectural design, offering insights that bridge the gap between historical knowledge and future sustainability.