The DBS Handbook of Civil Engineering

PARDEEP KUMAR
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Civil engineering is the practice of designing and developing infrastructure objects, on a large scale, developing nationwide transport systems or water supply networks, or on a more minor scale, developing roads and buildings, for example.

A civil engineer is responsible for all aspects of building structures – comprising the planning, design, budgeting, construction management, surveying, and analysis – and civil engineers should expect to use all these skills regardless of their specialisation. Civil engineering is a rapidly advancing industry, constantly adapting to contemporary developments and concerns, such as pollution, water shortages, and sustainable energies.

The DBS Handbook of Civil Engineering covers all aspects of civil engineering and its role in society. It covers a range of various civil engineering disciplines such as general engineering, structural engineering, geotechnical engineering, transportation engineering, environmental engineering, planning engineering, hydraulic engineering, construction engineering, materials science, surveying, and urban engineering.

This handbook integrates all of the diverse approaches that have gone into the making of the modern field of civil engineering. This work is intended for all those interested in this field. It will be of immense value to students of all kinds, especially students of civil engineering

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Contents

Engineering has been an aspect of life since the beginnings of human existence. Civil Engineering is one of the broadest and oldest of the engineering disciplines, extending across many technical specialties. Civil Engineers plan, design, and supervise the construction of facilities essential to modern life like space satellites and launching facilities, offshore structures, bridges, buildings, tunnels, highways, transit systems, dams, airports, harbours, water supply system, and wastewater treatment plants.

The earliest practice of civil engineering may have commenced between 4000 and 2000 BC in ancient Egypt, the Indus Valley Civilization, and Mesopotamia (ancient Iraq) when humans started to abandon a nomadic existence, creating a need for the construction of shelter. The construction of pyramids in Egypt (circa 2700–2500 BC) were some of the first instances of large structure constructions.

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He has authored and coauthored numerous journal papers, conference proceedings, and research reports in these areas. He was a recipient of the best teacher award in the Department of Civil Engineering in Year 2007. Furthermore, he has served as the Dean of Studies at Himachal Pradesh Technical University. He is the former Head of Civil Engineering Department National Institute of Technology Hamirpur.

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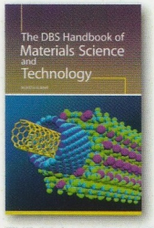

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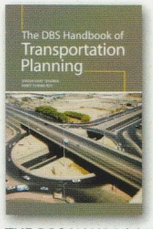

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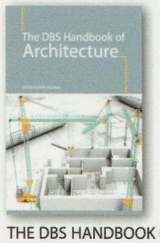

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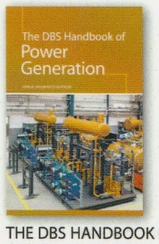

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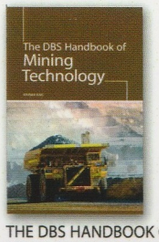

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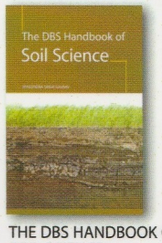

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