SUSTAINABILITY OF BUILT ENVIRONMENT

ROLE OF STEEL

Institute for Steel Development and Growth (INSDAG)

Our Mission Statement

To work in unison with all the stakeholders in the steel industry so as to evolve ways and means for more efficient usage of steel and provide optimum value to the customer.

Publication Number: INS/PUB/161

Price : Rs 300/-

INSDAG PUBLICATION NO: INS/PUB/161

SUSTAINABILITY OF BUILT ENVIRONMENT - ROLE OF STEEL

Compiled by –
Shiladitya Chanda

Prepared and Published by

INSTITUTE FOR STEEL DEVELOPMENT AND GROWTH (INSDAG)
"ISPAT PRAGATI BHAWAN"
793 Anandapur, Kolkata 700 107

info@insdag.com / membership@insdag.com
www.steel-insdag.org

December 2023

Price : Rs 300/-

USE MORE STEEL

THE PREFERRED MATERIAL FOR THE NEW MILLENNIUM

FOREWARD

Institute for Steel Development and Growth (INSDAG) has been playing a catalytic role over the last two decades to establish the advantages of structural steel when used in construction over other available materials among the stakeholders. However, due to various deterring factors such as high initial cost, non-availability of wide range sections off the shelf, skill gap for fabrication etc steel intensity in the construction in India has not followed the global rising trend.

Notwithstanding the above, steel is getting used in infrastructure such as bridges and buildings, as a primary construction material, in many cases. Reasons for such uses are obviously outweigh the benefits offered by other comparative materials such RCC / PSC. The facts that steel is 100% recyclable and offers a long repair free life, provide unparalleled advantage in term of sustainability of built-environment. Therefore, our endeavour is to give steel its rightful place in the realm of construction materials. Accordingly, INSDAG is now focusing on to reach out to relevant stakeholders of construction industry and educate them on the benefits of steel in construction through trainings and literatures.

INSDAG, collectively with a few other domain experts, is also working on to create an accepted framework and a validated database to carry out Life Cycle Cost Studies infrastructural assets in order to dispel or confirm any presumption based on which present decisions are being taken.

Till such time, the accepted and validated framework for LCC is available to decision makers to act on, this publication will serve the purpose of establishing qualitative superiority of steel in built-environment in terms of sustainability.

We are thankful to Prof Charles Simoes, Adjunct Faculty, Dept of Civil Engineering, Sardar Patel College of Engineering – Mumbai for painstakingly reviewing the document and offering invaluable inputs for improvement.

Happy reading!

Kolkata
December 2023

Pradip Kumar Mishra
Director General

Reviewer's Message

Having reviewed this INSDAG Publication titled "Sustainability of Built-Environment - Role of Steel" prepared by Mr. Shiladitya Chanda, I welcome you to an exploration of sustainable construction, shining a spotlight on the pivotal role of steel. This journey takes us into the heart of creating structures that play a central role in our lives. This text stands as a steadfast supporter of sustainability, illuminating how our constructions impact employment, the environment, and global challenges like climate change.

As we journey through the chapters, we confront the environmental challenges inherent in construction – from excessive resource use to generating waste and consuming water. The unfolding story emphasizes the urgent need to reshape our construction methods, placing sustainability in materials and resilience in structures at the forefront.

We delve into policy measures, the importance of steel, and the stages of sustainable construction, serving as guiding lights for transformative change. The narrative paints a comprehensive picture, highlighting universal aspects of sustainability and providing policy tools for meaningful transformation. The reuse or repurpose of steel components emerges as an environmentally advantageous practice, surpassing the benefits of recycling or downcycling.

This text specifically underscores the vital role of prudent water usage in constructing with steel. Water is a crucial element, and careful consideration of its use is paramount during the construction of steel structures.

Examining the performance of steel structures over time, the text emphasizes the significance of life cycle assessments (LCA) in gauging sustainability.

Beyond being a mere collection of facts, this text serves as a call to architects, policymakers, and builders to reconsider our approach to construction. It encourages us to shape a built environment that not only stands the test of time but also stands as a testament to our commitment to a sustainable, resilient future.

As we navigate the evolving landscape of construction, these chapters offer practical insights and signposts, guiding us toward a future where steel structures not only reach new heights but do so with a considerate and sustainable approach.

To a horizon of sustainability,

Charles Simoes

Adjunct Faculty
Department of Civil Engineering,
Sardar Patel College of Engineering, Mumbai

Contents