

# NATIONAL ACADEMY OF CONSTRUCTION



ISO 9001-2015

**(A Society of Government of Telangana)**

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## **Executive Development Training Programme for The Year 2021-22**

**3- Days Short term Course on  
ICONIC BRIDGES - CASE STUDIES**

**28<sup>th</sup> to 30<sup>th</sup> October, 2021**

**VENUE: NAC CAMPUS**

# NATIONAL ACADEMY OF CONSTRUCTION, HYDERABAD

## HIGH-LEVEL & ICONIC BRIDGES

### Necessity, Construction, Maintenance - Case studies

#### Introduction

Functionality is fundamental, but bridges are both structures and symbols. A bridge can join riverbanks or cross great distances, but most profoundly it connects people to each other and to their dreams. A beautiful bridge can become an enduring symbol of an area, enabling and deepening a community's sense of itself.

Civic pride has over the centuries compelled governments and local highway authorities to attempt to build pleasing bridges in our cities and important towns in order to maintain the quality of the built environment. It is unanimously agreed that the linking of places via bridges symbolises cooperation, communication and continuity and that the bridge is one of the most important structures to be built. The Bridge Engineers identified that the three basic components of good architecture as firmness, commodity and delight. The argument that good design costs more is facile (Simplistic statement), good design requires a good design team.

The bridge engineering, in the past 60-70 years, have brought many new forms of bridge architecture (plate girder bridges, cable stayed bridges, segmental prestressed concrete bridges, composite bridges), and longer spans. Enormous knowledge and experience have been amassed by the profession, and progress has benefitted greatly by the availability of the digital computer.

**Suspension**, as well as cable stayed, bridges, in particular, are widely used in highways crossing gorges, rivers, and gulfs, due to their superior advantages such as mechanical properties, large spanning ability, and appealing aesthetic appearance.

The number and the span of the suspension bridges are increasing gradually along with the advancements of computational capabilities and the construction technology. Suspension bridges are capable of huge spans, bridging wide river estuaries and deep valleys and have been essential in establishing road networks across the country.



Longer-span trusses are built without any increase in the dead weight.

**The Cable-stay Bridge** is probably the most visually pleasing of all modern long-span bridge forms. Cable stays are an adaptation of the early rope bridges, and guy ropes for securing tent structures and the masts of sailing ships. Experience & Design has shown that fewer cables were needed than for a conventional suspension system, and there was no need for anchorages and therefore it was cheaper to construct. The modern concept of the cable-stayed bridge proved more economic, for moderate spans, than either the suspension or arch bridge forms. The construction of the modern multi-stay cable-stayed bridge can be seen as an extension, for larger spans, of the prestressed concrete, balanced cantilever form of construction. The economic advantages have established the cable-stayed bridge in its unique position as the preferred bridge concept for major crossings within a wide range of spans.



**Prestressed concrete** decks constitute a large proportion of the current bridge stock around the world. Since prestressing was introduced into concrete bridges in the early 1930s it has challenged the bridge engineer's imagination as new techniques developed, spans became longer and the appearance of bridges more important. In situ or precast concrete, simply supported, continuous or cable stayed structures; beams, slabs or boxes; all feature in prestressed concrete bridges. The development of prestressed concrete bridges has given the bridge engineer increased flexibility in the selection of bridge form and in the construction techniques available, resulting in prestressed concrete frequently being the material of choice for bridges with spans ranging from 25 m with precast beams up to 450m when cable-supported.

Bridge construction and design may be of Deck form, Solid-slab bridges, Voided-slab bridges, Beam-and-slab bridges, In situ multi-cell box-girder decks, In situ multi-cell box-girder decks, In situ single-cell box-girder bridges,

The NAC is planning to conduct an EDP on Bridges Health Monitoring system including construction techniques, Documentation of Bridge Data, Maintenance of Bridges.

## **Contents**

- 1) Importance of High-Level & Iconic Bridges.
- 2) Suspension Bridges
- 3) Cable stayed Bridges
- 4) Prestressed Bridge
- 5) Extradosed Bridges.

## **Training Faculty:**

Experts with rich working experience in the field of Bridge Design, Construction and Maintenance.

## **Profile of Participants:**

Junior to senior level professionals involved in Design, Construction and Maintenance of Bridges.

## **Methodology:**

Participants will be given study material. Case studies will be shown during training period. Training will be more of interactive type with discussions. Participants will be given a certificate of participation on completion of programme.

## **Programme Venue, Dates & Timings:**

Venue: **NAC, Hyderabad**

Dates: **28<sup>th</sup> to 30<sup>th</sup> October, 2021**

Class Timings: 10:00 AM – 01:00 PM & 02:00 PM - 05:00 PM.

## **Fees:**

- i)** Non- Residential Rs 7,500/- per head.
- ii)** Residential Rs. 10,500/- per head. (sharing accommodation in double bed AC room)

## **Mode of Payment**

Programme fee is to be paid in favour of “Director General, National Academy of Construction (NAC) Hyderabad” in the form of Demand Draft payable at Hyderabad. Alternatively, the payment may be made Electronic Fund Transfer (EF) to Director General, National Academy of Construction – SB – A/c No. 62422229281 with The SBI Madhapur – 500081, IFSC Code: SBIN0021162. While using EFT method of payment, please ensure to mention programme title.

## **Certificate**

A certificate of participation will be awarded to each participant on conclusion of the program.

### **Course Co-ordinator**

Sri V Venkat Narayana,

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### **Course Director**

Sri. K Radha Krishna,

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