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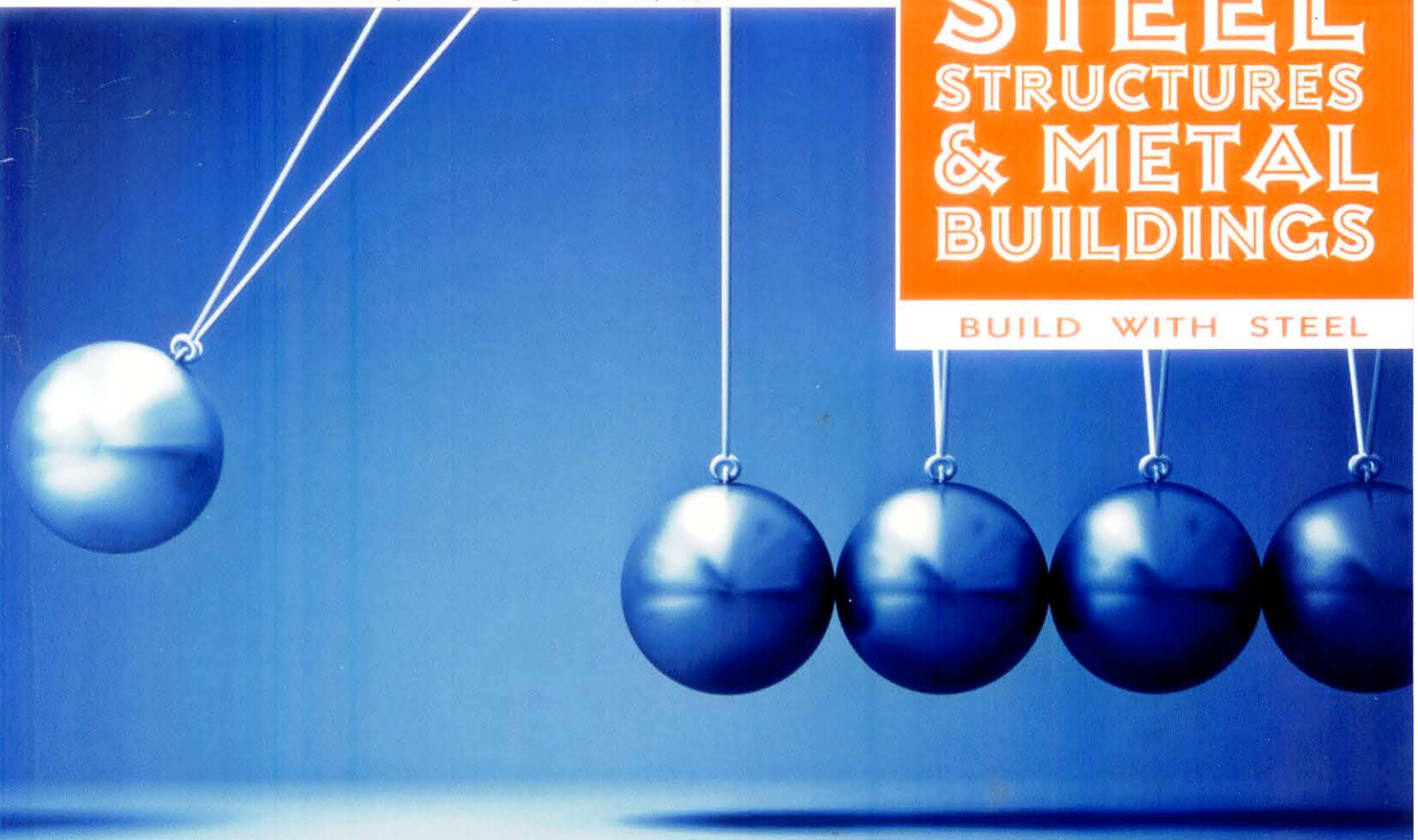
STEEL STRUCTURES & METAL BUILDINGS

BUILD WITH STEEL



STEEL IMPACTS EFFICIENTLY IN TRANSPORT...

RAILWAY STATIONS AT NAYA RAIPUR

a small piece of the 'Smart City' crossword

The State of Chhattisgarh is undergoing an urban facelift, the focus of which is the proposed Smart City of Naya Raipur. Following the attention that the Prime Minister's initiative for India's 100 smart cities is receiving, Creative Group Architects based in New Delhi, believe that the idea of a smart city should be one of livability, sustainability, highest quality of life and economic viability. Prof. Charanjit Shah, Founding Principal of the leading firm, is working relentlessly towards his vision of redefining an Indian Smart and Sustainable City and the design of the railway stations at Naya Raipur is just one small piece of the 'Smart City' crossword.

Amongst the many global firms, Creative Group was the sole Indian firm to have participated, and later, won the Global Design Competition for the proposed stations. Owing to the firm's experience of designing metro stations at Chennai, and various intermodal hubs in Ahmedabad and Gandhinagar, the emphasis in this project was on creating simple, yet, visually appealing and easy to construct stations modulated with steel framing. The project includes the design of 4 stations, the Naya Raipur station being the central hub providing effortless intra-city and intercity connectivity bringing people from Raipur and Naya Raipur closer, whereas the other 3 being the suburban stations. Spread over an area of 40 acres, the Naya Raipur Station has multiple platforms and similar thought process as the rest of the stations in terms of its design and structure.

On-Site Planning

The understanding of the site directed the designers towards providing an arterial road for entering the station to avoid any traffic congestion on the main road that holds the existing BRT system. The drop off and parking facilities have been provided on the west side. Through this, the designers were also able to achieve direct connectivity between the BRT and the railway station through a foot-over bridge which is handicap-friendly.

Further, to elevate the passenger experience, the architects have laid out a public piazza at the centre of the west side development which includes informal shops, sitting spaces, green walkable streets and a water body to captivate the passenger as he moves along the station. The green walkable streets amidst the commercial shops inculcate a sense of serenity and comfort by avoiding the harsh sun and let the passenger interact with nature. The piazza is user friendly with a clear cut movement pattern. The spaces on the left and right side of the public piazza are dedicated to Central Business Districts and other mixed use developments using the elevated track mound.

On the east side, recreational nodes are designed in the form of green pockets which are open to the public to relax and interact, thus making the station complex a bilateral transit hub.

Station Design

The station platform is provided on the first floor whereas the ground floor is utilized for the public piazza. Formal shops and kiosks are well distributed in the piazza braced with sit out spaces. Lifts and staircases are provided to move to the other floors. A salient feature of the station design is the skylights that provide natural light to the piazza through the cut outs that are made on the track level. Apart from their practical duty of bathing the stations with natural light, these skylights make the station more sociable and energy efficient. The reason behind incorporating these skylights is to provide a certain character to the stations that conveys openness and transparency.

Skylights have also been used on the roof of the station to maximize daylight and minimize dependency on artificial sources thus optimizing energy costs. These skylights have been extended on the concourse area to create an outdoor indoor environment. A monumental staircase connects the ground floor to the second floor which is equipped with a food court and cafeterias to engage the users even further. The foot over bridge from the BRT is directly linked to the second floor.

Building Structure

Steel being the predominant material has helped in achieving the iconic form of the station. The building structure has been designed as a dual skin. The outer shell is derived with a steel portal frame with steel intermediate tie beams and purlins that support the stand-up seam metal roofing system thus creating the external envelope. The primary portal has been tilted to achieve the desired shape that exhibits a strong architectural expression without any structural complexity. The metal roofing provides insulation and lowers down heat consumption, thus making the station an eco-friendly transport hub. Horizontal louvers are given on the façade which additionally allow light inside the station complex. The floor plates are made up with cast in SITU RCC framed structure consisting of RCC columns, beams and slabs.

According to Prabhpreet Shah, Executive Director, Creative Group, they envisioned these epochal railway stations as landmarks for commuters with world class facilities that also make them commercially viable. It is important for Tier II cities like Raipur and Naya Raipur to have such intermodal hubs to connect them and bring them at par with the rest of the country.

Still grappling with the nuts and bolts of building a smart city, our country is on the lines of fully understanding what an 'Indian Smart City' should be. Undoubtedly, the architects and planners of today need to re-look and penetrate into various challenges which our cities are facing. Thus, adding such landmarks to new city skylines that provides seamless intercity and intra city connectivity, and also links various modes of transport together, provides easy traffic management and user friendly movement. The cynosure of such projects is on building a facility that enhances the user experience and encourages use of public transport, thus, making the city 'smart' in the absolute way. ■

PROF. CHARANJIT SHAH
Principal Architect
Creative Group

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Client	Architects	Structural Consultant	Number of Stations
Naya Raipur Development Authority	**Creative Group**	**EGIS India**	**4**

Total built-up area per station	Tubular/built-up section	Steel Quantity	Current Status	Project Timeline
13,000 sq. mtrs.	**YST 250 grade of steel**	**210 tonnes**	**Construction in process**	**2017**