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**STEEL  
CONSTRUCTION  
SUMMIT**

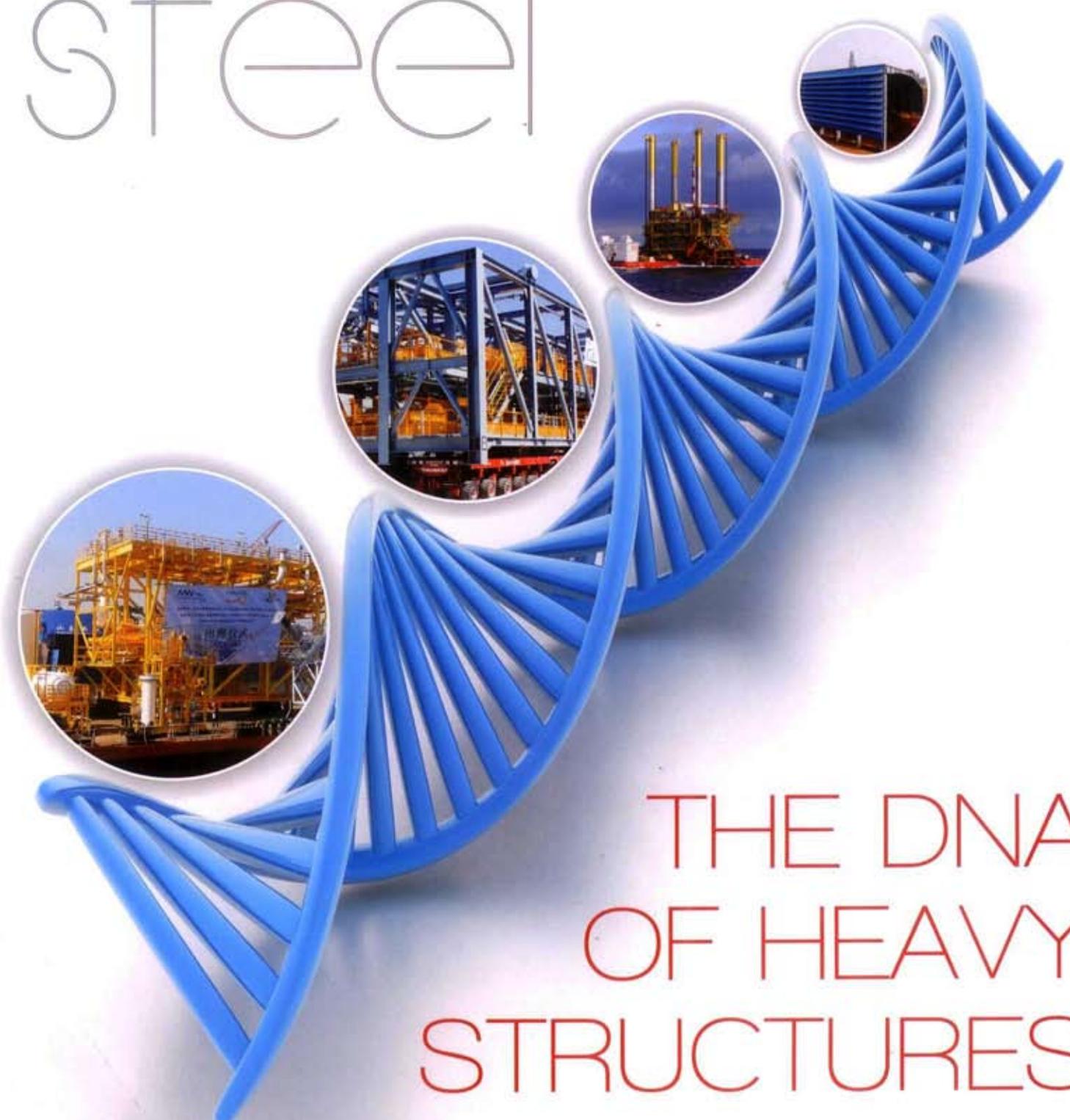
a new era in steel construction



# STEEL STRUCTURES & METAL BUILDINGS

BUILD WITH STEEL

# steel



# THE DNA OF HEAVY STRUCTURES

# METRO STATION AT CHENNAI AIRPORT

a form beyond the realms of contemporary architecture



The architects of the admirable Chennai Airport, a structure that boasts of many 'firsts' in architectural engineering in India, have done it once again with the Chennai Metro which is located inside the airport area. The metro has been successfully innovated as an aesthetic extension to the airport wherein the engineering defines its architectural vocabulary.

With the addition of the Chennai Metro, the new Airport Terminals of Chennai are one of the first Airports in India which can claim seamlessly connectivity through various transportation systems viz. air travel, national highway, suburban railways and metro rail making it a unique Multi Modal Transportation Complex.

#### Plying Connectivity

The metro station at Chennai Airport is a unique station having large importance, not only in terms of providing connectivity, but, also in terms of comprehending the already created unique architectural marvels - new Domestic and International Airport Terminals. It is connected to the terminals via a glass and steel tube consisting of walkalators, another first for a metro station in India.

#### Shrewd Planning

Creative Group planned the overhead metro station right in front to the National Highway with its axis lying on the axis of the whole complex, with the New Domestic and

International Terminals being layout at an equal distance from it, thus, providing an easy access to both of them. The central location of the station makes it all the more important that it supplements the prominent architectural vocabulary already visible at the complex, yet, not compromising on its own identity.

The building has to be subtle, yet, dynamic in form justifying its central location in the site, not overpowering the airport terminals. The building is, thus, designed with portal frames which are being inspired from the now famous V-columns of the airport, adheres to the vocabulary of the complete campus, and fulfils the desire of having its own unique features.

The station's form showcases the interconnection of both the terminals not only on the physical plane, but, on the conceptual plane as well. This built form has been achieved by constantly increasing the size of the arched double portals, thus, making the building to expand both, in elevation and plan. The flow of the passengers from both the terminals is showcased by building's form consisting of two identical tubes ascending towards the central axis from both the sides and penetrating inside the biggest central tube. The largest central tube has been made with four identical central portals, making a big vault like structure at the centre. This large tube like structure is perpendicularly connected by a large subdued vaulted roof form which houses the commercial and concourse areas.

**Adhering Vocabulary**

The building structure has been designed with arched double steel portals. The arched double portals consist of two identical arches tilted at equal angle along their axis and are interconnected at five points, thus, forming a stable double portal structure. These double portals are then again tilted at an angle along its axis to achieve the ascending roof form of the side tubes. The double portal arrangement forms the 'V' shape in elevations, thus, adhering to the overall vocabulary of the campus.

The building thus formed, is highly dynamic and vibrant, representing an organism generated through the geometry of the structural elements and following the philosophy of having the structure and the architecture as one. The built form has helped in achieving a station which is both, aesthetically and functionally, beyond the realms of the contemporary architecture of the metro stations.

**Structural Bifurcation**

The building consists of 5 levels - having 2-wheeler parking for the daily commuters in the basement level, commercial office area at ground level, passenger entrance and commercial areas at metro ground level, passenger concourse and connection with the airport terminals at metro concourse level, and platform and commercial areas at the platform level.

The building connects with the Airport Terminals through a glass tube. This specially

designed glass tube is supported by two 'V' columns, resembling the geometry of the double 'V' columns of the departure flyover. This connector tube directly connects the metro station with the Airport Terminals. The building has been made highly accessible with all levels being connected with escalators and elevators. The pedestrian ramp has been provided till the lifts at the ground levels and ADA tiles are used throughout the designated path of the circulation for making it ADA compliant.

**Sound Geometrics**

The complete enclosure is covered with a double skin stand-up seam aluminium roofing system to achieve the complex curvilinear shape of the roof form. These steel portals are made up of built-up box section of MS plates which is bended in the arched profile of the roof. The steel portals are connected with the connecting purlins and connectors, thus, structurally tying the portals.

The metro shall cater to an average ridership of 2,373 boarding passengers and 840 alighting passengers per year, thus, providing the much required connectivity to the Airport Terminals with the city. This station shall be the last of Washermanpet line to airport/mountline.

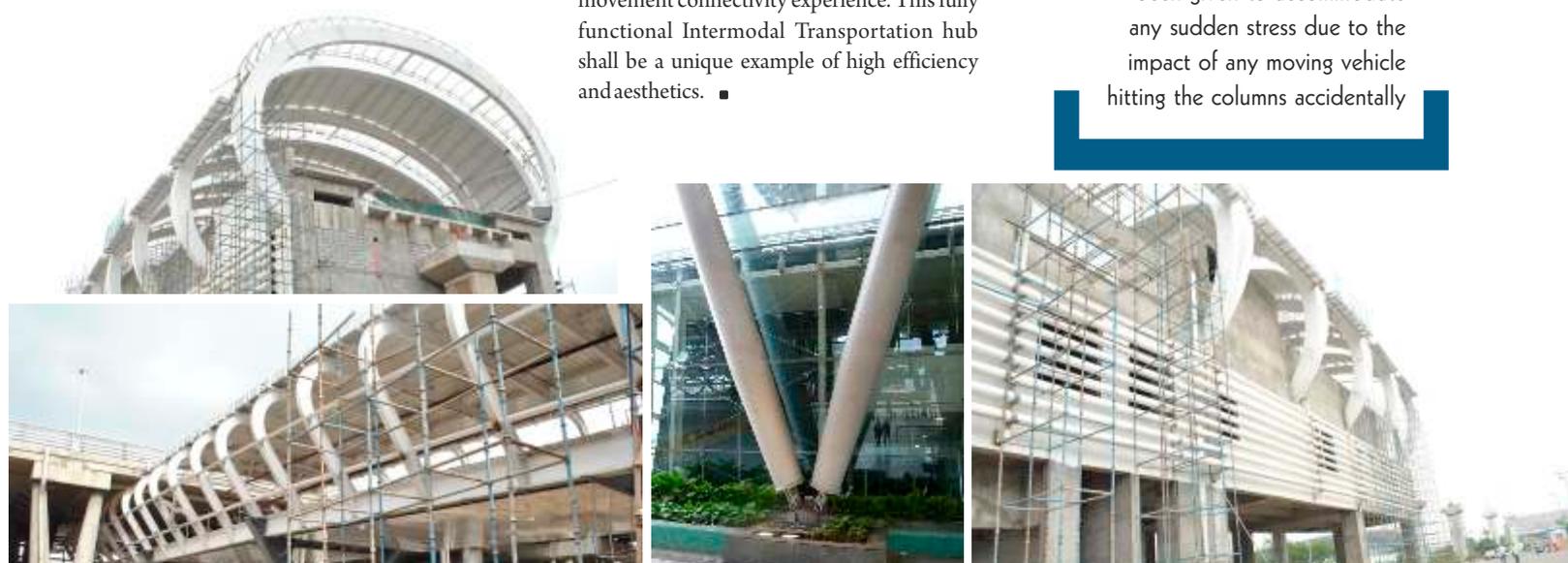
**Current Status**

The civil and structural works of the station are completed and hence it is expected to be operational by early 2016. Next time when you land in Chennai, this vibrant intermodal station shall be providing you with a seamless movement connectivity experience. This fully functional Intermodal Transportation hub shall be a unique example of high efficiency and aesthetics. ■



**PRABHPREET SHAH**  
Executive Director  
Creative Group

The building formed is highly dynamic and vibrant, representing an organism generated through the geometry of the structural elements and following the philosophy of having the structure and the architecture as one. To sustain the stability factor of such a heavily engineered structure, the complete structural system is designed as per the IS codes with special provision being taken for the vibration load of the moving train. As few of the columns are situated on the dividers of the vehicular roads below, special consideration has been given to accommodate any sudden stress due to the impact of any moving vehicle hitting the columns accidentally



Structural Consultant  
CEC

Principal Contractor  
URC Construction Pvt. Ltd.

Total Area  
18,000 sq. mtrs.

Project Cost  
Rs. 75 crore approx.

Year of completion  
2016