“TURNCON” – PIIPL'S PATENTED FAÇADE-BEAM CONNECTION – TOTAL SOLUTION FOR METRO STATIONS WITH DECORATIVE PRECAST WALLS

Ajit Bhate and Kapilesh Bhate

Precast Infrastructures Pvt. Ltd., India

Abstract

With probably the most aptly worded Seminar title in recent times, in today's India, these four words - “Innovation”, “Concrete”, “Infrastructure”, “Challenges” are eminent and critically linked with each other. Strong willed projects like Metros, Bridges and Roads are taking existing challenges by their horns and delivering.

Key Words :

1. Introduction

In order to contribute to society and industry in our own capacity, we have developed and patented an

- Innovation
- In Concrete
- For Infrastructure sector in order to overcome
- The Challenges faced by our fellow engineers at site

Since our innovation is primarily developed for Metro Stations, we would like to focus on the same here.

2. The Challenge in Infrastructure

We observed 2 particular time-crunch challenges in creating Metro Infrastructure – the Design and Planning Stage and the Tendering Stage

1. Design and Planning –

Due to existing buildings, roads, services, etc. the architecture, design and planning is understandably time consuming.

2. Tendering –

Considering the high volumes of the project, it is obvious that the BOQ, Tender floating, responses, queries, extensions, submissions, scrutiny, evaluations, negotiations and finalization also understandably takes ample time.

Usually these 2 phases run more or less in parallel to each other. But the moment the design is frozen and the contractor is on board, the project gets on fire and it needs to get completed, NOW. Additionally, apart from those mentioned above, the challenges faced on-site, need not even be described in detail.

While most of these challenges are minimized by extensive use of Precast in major portions like viaduct and, now, the Station beams and slabs, the execution of Civil Finishing items like 'blockwork-plaster-painting' trio still remains relatively primitive, whether it is the Entry-Exit buildings or the concourse closure walls which are approx 7 to 8m and including parapet – almost 11m.

For handing over the stations to the subsequent services and electronics teams, this activity remains the contractor's pain area and bottle-neck today.

3. The Innovation in Concrete

Precast India Infrastructures Pvt. Ltd, in collaboration with our senior and highly respected Japanese counterpart scientists and professors have developed a patented precast façade-to-beam connection system to replace the conventional blockwork-plaster-paint activity which is

- Tedious
- Time-consuming
- Labour-consuming
- Sub-standard quality

We are replacing it with Precast Wall Panels which are

- Larger
- Decorative
- Stronger, yet Leaner

The key feature about these walls is that, being non-structural elements, these can be mounted on the peripheral concourse and platform beams from the outside, purely like a façade-wall, owing to our patented connection – “TurnCon”.

4. The Advantages

- Parallel Production - impossible in blockwork
- Flexibility in Installation – unique simple design
- Flexible Sequencing of erection
- Quality due to highly compacted precast concrete
- PU/ Silicon based sealants for joints
- Less Space required on site for raw material stack
- Erection can be done directly from trailer
- Erection only at night, less obstruction to traffic
- Less labour, less overhead, less management
- Less Safety hazard due to reduced operations
- Much faster than conventional blockwork-plaster
- Maintenance free, as it is high strength concrete

5. However, the most game-changing advantages are

- Aesthetically appealing stations with standardized or customized designs
- Valuable space gain inside the station (200mm along both lengths) OR reduced station width by 150-200mm approx
- Reduced Dead load on structure by at least 5% due to reduction in wall thickness, but equivalent sturdiness, and deletion of concrete transoms, mullions and lintels at regular intervals.
- We are pleased to present in brief, the applications of TurnCon Façade Walls in Metro Projects in Infracon 2017