

## L&T Al-Balagh Joint Venture

### Improving Labour Productivity



***“Renoir have presented interesting findings from site, which have been extremely useful for improving productivity”***

***M Shyam Sundar,  
Vice President***

***“The consultants provided a complete hands-on approach, being present on the site to help us drive productivity improvement”***

***Ravi Kadam,  
Head of Stadium Construction***

### Key Results

The productivity of direct labour (measured by ratio delay) improved by around 55% as compared to the base period, despite the extreme heat and humidity of a Qatari mid-summer. These results were also corroborated through Time and Quantity reporting

The increase in productivity has improved the compliance to the construction schedule

The Supreme Committee for Delivery & Legacy (SC) in Doha, Qatar appointed Al-Balagh Trading & Contracting Co. WLL. (Al-Balagh) and Larsen & Toubro Limited (L&T) as the main contractors to build the Al Rayyan Stadium just outside the city. The stadium will have seating capacity for 40,000 spectators, and will host games up to the quarter finals at the 2022 FIFA World Cup.

### PROJECT GENESIS

The Joint Venture engaged Renoir Consulting for a period of 16 calendar weeks to rapidly improve the direct labour productivity from the current levels. Excessive amounts of labour were being utilised, and the adherence to the overall production plan was falling behind, even despite this.

At Project commencement, the key issues causing inefficiency and lack of productivity were:

1. Productivity losses at site due to:
  - a. workmen discipline issues like extended breaks, loitering and early leaving.
  - b. delays due to any of below:
    - i. completion of succeeding or preceding task.
    - ii. lack of continuous work-front availability.
    - iii. workmen waiting for job allocation.
    - iv. ineffective supervision leading to workmen either idling due to “no job” or waiting for supervisory instruction.
2. Man-hours lost in waiting for repetitive material due to shortage of such materials.
3. Not maintaining the same team for similar jobs, thereby losing the opportunity to speed-up work as a result of learning through practice.

The need was urgent; and a minimum of 40% improvement in direct labour productivity was expected because of the engagement.

### PROJECT APPROACH

The following approach was adopted:

#### II. Definition

An initial series of “ratio delay” observations was carried out, on site, to establish the current productivity levels. This determined a base position against which improvements could be measured. Through these Ratio Delays, conducted by Renoir and supported by a selection of Joint Venture personnel, actual worker activity was identified – specifically, the number of people seen and working at any given point in time.

Site observations conducted in parallel were used to define the opportunities for improvement in direct man-hour productivity. The opportunities thus identified were the following:

- i. **Man-power control** to prevent productivity losses due to early leaving and late starting.
- ii. **Daily work planning** to ensure work is allocated according to construction priority; and sufficient work to the respective labour teams to permit the attainment of target rates.

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- iii. **Operational Work sequence** to optimise the utilisation of man-time.
- iv. **Crew size** commensurate to the scope and complexity of the job.
- v. **Material management** with focus on “last mile” delivery; and proper storage thereof.
- vi. **Performance measurement** to drive individual accountability.

## II. Rapid Intervention

This phase involved direct on-site intervention by consultants to realise each of the opportunities defined above. The interventions are chronologically listed as below:

- i. Man-power control was enhanced through the following interventions:
  - a. Design and Implementation of a pass card system, which led to the identification of workers absent from their workplace without permission. Consequences included disciplinary action, and the word soon spread, significantly reducing loitering.
  - b. “Name and Shame” workers leaving early and starting late.
- ii. Daily work planning was facilitated by the following:
  - a. Monthly / Weekly quantity-based work schedule.
  - b. Quantitative Target based work allocation.
  - c. End of shift work planning and work review. The planning and work review was conducted based on tender productivity rates, and corrective actions were taken for off-schedule performance.
- iii. Operational work sequence: These were studied and mapped, leading to reduced waiting time of some members within a team, who now didn't have to wait for their colleagues to finish something before they could get to work. Also...
  - a. Maintaining the same teams doing the same jobs meant performance speeded-up as they became more practised; and, in parallel...
  - b. The provision of continuous availability of work front.
- iv. Crew Size was optimised by removing redundant manpower identified through on-site time and motion studies.
- v. Material Management was facilitated through the following:
  - a. Construction of satellite storage for consumables and repetitive materials. Less wandering about the site to find what was needed, or “borrowing” from other areas, which merely create a second problem.
  - b. Material handover system for reinforcements and formwork.
- vi. Performance Management was enhanced through a competitive ranking of the productivity, on a weekly basis, as reported through the Time and Quantity reporting system for the following:
  - a. Foreman.
  - b. Zone Engineer.
  - c. Zone.

This instilled a sense accountability and zone awareness which further contributed to productivity improvement.

### III. Time and Quantity report implementation

A Time and Quantity reporting system was implemented for all direct manpower. The time and quantity was reported by Foremen and verified by Engineers. Renoir Consultants would:

- i. further verify the quantities with respective zone managers.
- ii. verify the manhours reported with the time sheets.
- iii. corroborate the productivity numbers (reported through time and quantity report) with the productivity numbers reported through "Ratio Delay".

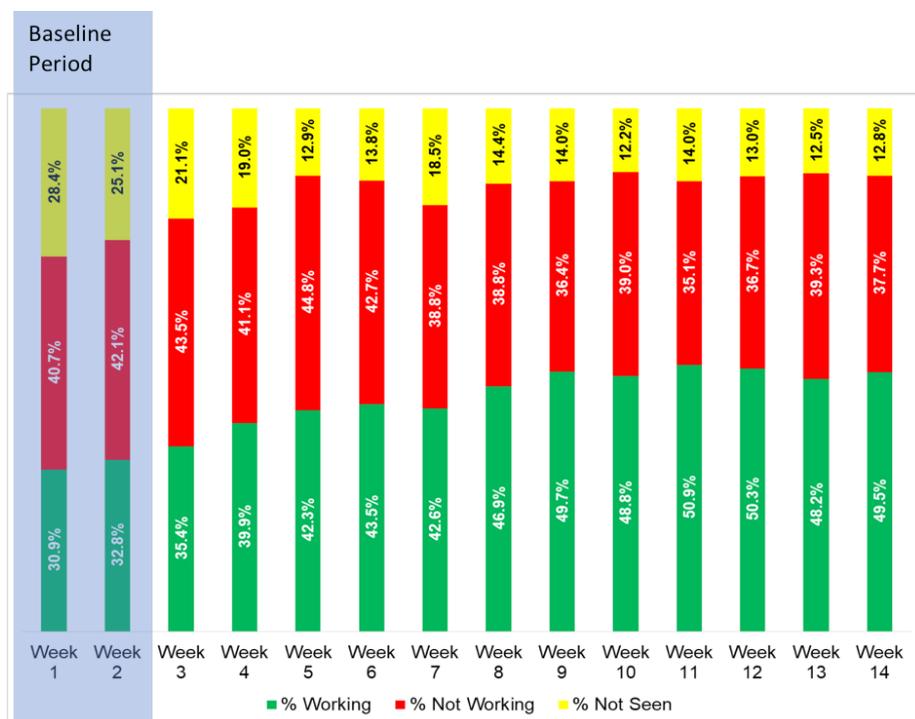
#### IMPLEMENTATION

Implementation of all solutions through extensive site presence, and facilitation wherever required:

- I. Class-room training for facilitating time and quantity reporting.
- II. On-site coaching of Foreman and Zone Engineers for measuring and controlling productivity on a short interval basis.
- III. On-site coaching to develop people management skills.
- IV. Daily communication of productivity losses observed on site with all levels of the organisation, to avoid them recurring.
- V. Auditing of the solutions implemented to ensure the benefits were sustained.

#### RESULTS

Within a short timeframe, control was re-established across the site, and production was achieved at a significantly reduced labour cost.



## THE RENOIR GROUP

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