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PRODUCT SHOWCASE

Hill International’s ‘marathoner’ sets innovative benchmarks for HSE in India’s metro sector

Major industrial/development activity comes with its share of health safety and environment (HSE) challenges. And in particular, if it is a project like the Mumbai metro where deployment of heavy machines and manpower – with minimal impact on a teeming population of over 20 million (or 2 crores) – is the starting point of several other challenges to be overcome without any lost time accident or liability.



Song-Dan Han,
Senior HSE Manager,
Hill International

As Hill International’s head of HSE for the Mumbai Metro Line 4 (MML 4) project, industry veteran Sang-Don Han is taking the challenges head on: he does daily on-site inspections for a bulk of the near 33-KM MML 4 alignment at both the LHS and RHS side during the lockdown from April to December 2020.

Han’s background and passion for marathon, cycling and high physical endurance has stood him in good stead for his daily site work. He is an avid long-distance runner who has completed 68 full marathons in South Korea (his home country) and India and the distance he covered is over 300 KMs of ultra-marathon.

Handbooks and check lists

In 2018, US-based Hill International and its consortium (DB Engineering & Consulting and Louis Berger Consulting, now called WSP) was contracted by the Mumbai Metropolitan Region Development Authority (MMRDA) to provide design review, project management and construction supervision services for MML 4 which consists of a 32.3-km elevated corridor and includes 32 stations along the Wadala-Ghatkopar-Mulund-Thane-Kasarvadavali section.

“It is not compulsory to be a marathoner [to be a safety guru], but it is good to have a physically fit and healthy person for project inspection,” Han said, adding while on his

site inspections to both sides of the barricades to identify potholes and record them with video cameras, he gathers photos that are flagged up to contractors. “Potholes are the most challenging safety concern during monsoon,” he said.

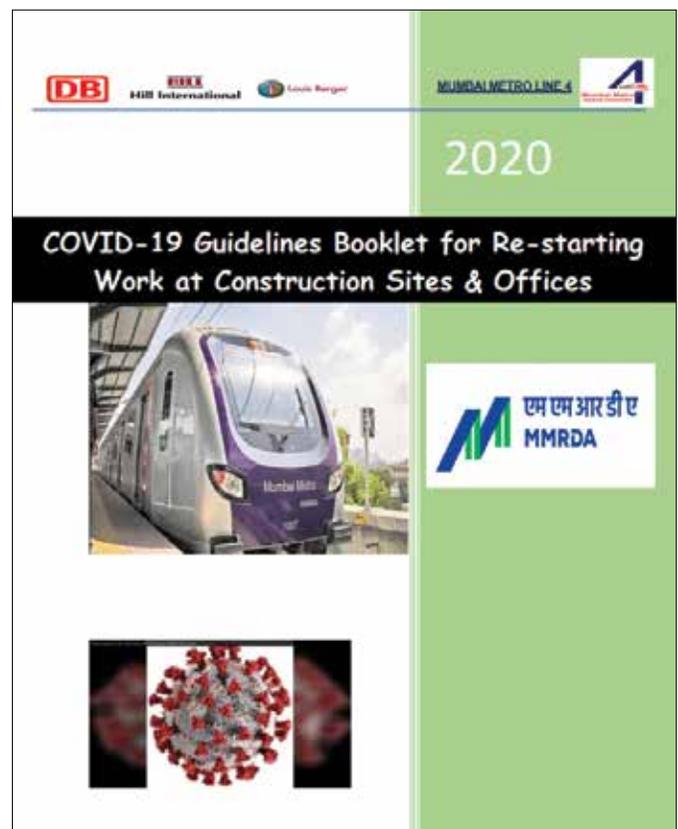
Han has not settled for the innovative manner of site inspections. Rather, he has diligently worked on two handbooks also on ‘Monsoon Emergency Preparedness’ and ‘Covid-19’ guidelines.

“Th handbooks have led to a check list which has made it mandatory for contractors to follow rules. Without adherence they cannot proceed on any work,” Han said.

New safety rules

A major spin off from these measures are a significant bump up in HSE standards with the new measures being:

- All the erection scheme for heavy lifting are being checked by Han and his team of experts in order to prevent any incident due to improper lifting plan. Han has



also made it a point that all special/ important and risky erection works are witnessed either by himself or his deputy;

- Rope light/Area light operational percentage checking is done every week by joint inspection done along with contractors;
- A barricading board system is in place to ensure transparency, while a progress review meeting is held each week;
- Han has also implemented a new system of identifying the relative performance of various contractors in the project through recording the number of HSE observation points per span in each package and updating them on bi-weekly basis. The findings are presented at progress review meetings as a discussion point.

Mumbai and monsoon

The growing population of Mumbai and its congestion is by itself a mega challenge for any metro project. “When the barricades were erected to occupy a portion of the road on either side of median for the metro works, it added to the woes of public. Consequently, increased density of traffic on either side of the barricades continue to pose severe hazards to workers and staff,” Han said, noting: “Accessing the worksite at different locations where signal intersections are not available also pose additional problems for workers and staff on a daily basis.”

Yet another challenge is upholding safety standards during monsoon.

According to Han, all contractors are made to work out a detailed ‘Monsoon Preparation Plan’ well ahead of the rainy season. It includes the resources to be mobilized and pre-located at strategic locations to respond to any emergency that may occur, such as a blocking of storm water drain, potholes on roads and tree branches falling on road, to name a few.

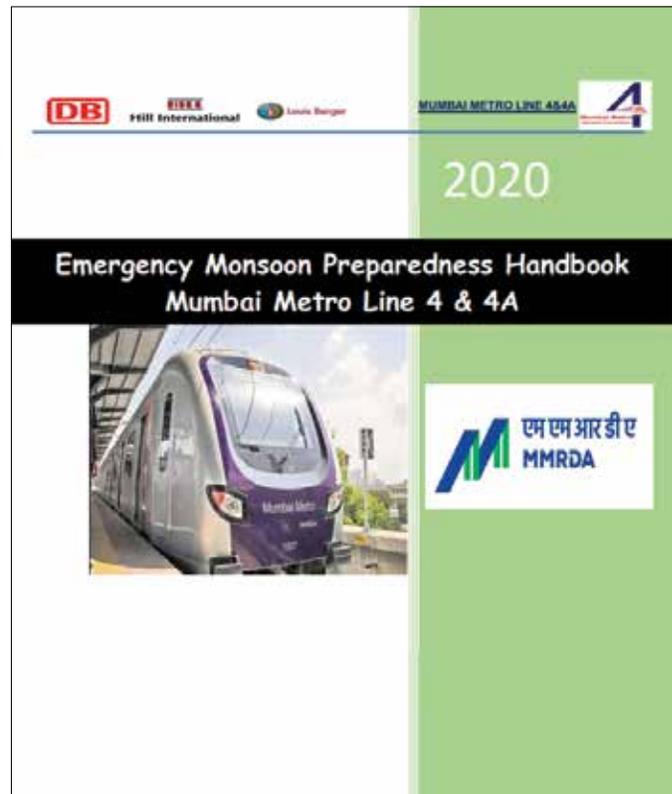
“Small teams with required tools are positioned at such locations and round the clock manning of emergency control rooms is ensured in all packages. Besides, we also keep in touch with general contractor and MMRDA offices to get real time information from the site,” he said.

Safety in Metro Projects

Typically, there are a few thumb rules when it comes to safety in any metro project as they are equipment sensitive – be them underground or of viaduct configuration.

The challenges are:

- Elevated metro work takes place predominantly along the



median, thereby exposing the staff and workers to traffic through its execution at road level. Being equipment-intensive, safety while working with equipment, especially during heavy lifting in elevated metro project, assumes enhanced significance.

- Any malfunction of equipment during lifting or miscalculation of safe working load can lead to multiple casualties, as the work takes place with busy traffic plying on adjacent roads.
- Movement of equipment into and out of barricaded areas, working with equipment partially parked on the road due to restriction within the barricaded areas, exposure of workers, machinery and staff to high speed traffic driven by inattentive drivers especially at night – all add to increase risk level.
- High conspicuity of worksites, efficient traffic diversion/ management, repeated briefing of traffic marshals and other workers who work while remaining exposure to traffic on the road assume great importance in preventing incidents. [ISR](#)

By: Ashok Dutta, Editor, Hill International