HYDRID LAUNCHING GANTRY FOR THE CONSTRUCTION OF SPAN-BY-SPAN PRECAST SEGMENTAL BRIDGE

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Abstract

Unlike balance cantilever construction of precast segmental bridge, span-by-span construction method requires temporary shoring to support the segments before they are fully post-tensioned to a self-sustained structure. In most cases launching gantries are being used for the purpose. Launching gantries are custom made equipment fabricated according to the design requirements to overcome various site restrictions. They are made to contractor's preferences and other special specification pertinent to the specific site requirements within the budgeted cost. It can be an overhead type or an under-slung type with respective advantages and dis-advantages. In Package-A of Kelana-Jaya Line Extension project for Light Rail Transit System (LRT) in Kuala Lumpur, a set of requirements was set by the bridge designer. With these limitations, both the conventional over-head and under-slung types were not feasible to be used. A new Hybrid Launching Gantry was therefore developed to handle the precast concrete segments for the elevated bridge structure of the project. Five hybrid launching gantries were successfully used to install span-by span bridges for this Package-A. These new launching gantries were supported on the brackets, secured directly to the sides of piers. Instead of having the main truss under the precast segments as in the under-slung launching gantry case, the main truss was designed to stay above the precast segments to gain the advantages of an over-head launching gantry system. This innovative design has several distinctive advantages over other conventional type of launching gantries. This paper presents the design and development processes to meet the project requirements, complete with descriptions of technical detail of this unique equipment. The challenges of fabrication and installation are also highlighted.

Keywords: Segmental bridge construction, Launching Gantry, Launching, Span-by-span,

Figure 0: Hybrid Launching Gantry used in LRT Kelana-Jaya Line Extension Project Package-A

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