



Certification and Operation Audit of Segmental Bridge Launching Gantries

Jonathan C. MCGORMLEY

Consultant
Wiss, Janney, Elstner
Associates, Inc.
Northbrook, IL, USA
jmcgormley@wje.com

Mr. McGormley received his bachelors from the University of Cincinnati and masters degree from Purdue University, both in Civil Engineering.

Ralf SCHUETTE

Viaduct Engineer
Bilfinger Berger AG
Vancouver, BC, Canada
ralf.schuette@gccjv.ca

Mr. Schuette received his civil engineering degree from the Technical University of Dresden / Germany

Howard J. HILL

Senior Consultant
Wiss, Janney, Elstner
Associates, Inc.
Northbrook, IL, USA
hhill@wje.com

Dr. Hill attended the University of Illinois where he received his bachelor, masters, and doctorate degrees in Civil Engineering.

Summary

The Maumee River Crossing Project is a large scale concrete bridge project. The contractor chose segmental construction which required the use of four different types of gantries. To assure a consistent design basis, all of the gantries were checked using the governing project engineering standards and project-specific loads. Due to the unique movement capabilities of these launching structures, each construction step from launch to final segment release was examined for each span, and span-specific work methods were developed. In some cases, gantry modifications were required to handle the project demands. In other cases, constraints posed by the supporting structures necessitated the use of structural supplements and customized operational procedures. A physical inspection of all gantries was performed to verify as-build conditions. In addition, quarterly operation audits were carried out to observe launch procedures and conformance of span-specific work methods.

Keywords: overhead gantry, underslung gantry, precast segmental construction, post-tensioning, launching

1. Introduction

The Maumee River Crossing Project is a large scale bridge project in the city of Toledo, Ohio. The project replaces an existing draw bridge on I-280 with a new high level crossing. The contract was awarded to Frucon Construction Corporation, St. Louis, Missouri for \$219 Million US. Frucon Construction Corporation is a fully owned subsidiary of Bilfinger Berger AG, Germany.

The bridge consists of a 465 meter cable stay bridge with a single pylon and 7,284 meters of approach and ramp structures. The complete bridge is designed as a segmental precast box girder with a range of 8.8 meters to 20.7 meters wide segments. The segment depths vary from 2.7 meters for the approach and ramp segments to 3.7 meters for the main span segments.

The approach and ramp spans are post-tensioned into three span units, separated by modular expansion joints. The individual segments were glued together with epoxy, except where in-situ closure pours were made to complete each span. External post tensioning was applied after the concrete at the closure pour reached sufficient strength.