

Chapter

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The Main Avenue Bridge, Cleveland, Ohio, USA

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Introduction

The Main Avenue Bridge in Cleveland is a remarkable engineering work in many ways. It is a large-scale, complex design and has an interesting social history. It embodies many structural innovations, and it was carefully detailed with consistent aesthetic principles. It was built with great efficiency in 17 months, and its performance over 77 years has been excellent. The bridge has a total length of approximately 1800 m (or 2440 m with approaches) with at least five horizontal curves and several vertical curves. The bridge was built to provide an east–west transportation link that did not require motorists to go through downtown Cleveland streets. It replaced the Main Avenue swing bridge over the Cuyahoga river, which was a traffic bottleneck, and it relieved traffic from its southern neighbor, the Detroit-Superior Bridge.

Planning and Design

Planning for the bridge began in 1928, but the Great Depression and failure of a county bond levy in 1930 halted the project. However, in September 1937, it became one of the initial projects funded by the Federal Emergency Administration for Public Works, whose charge was to fund meritorious public works with the intent to “provide stimulus” to the American economy. Engineering staffing began in August 1937 and was completed in December. The Cuyahoga County Engineer’s Office received over 130 applications, many from graduates of leading US engineering schools. About 35 engineers were hired to design and supervise construction at a typical salary of \$400 per month. At this time, John O. McWilliams was the Cuyahoga county engineer, W. E. Blaser was county bridge engineer, and Wilbur J. Watson was the project consulting engineer. The person who led all aspects of the design was the chief design engineer Fred L. Plummer. Prior to joining the County Engineer’s Office, Plummer had been an associate