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CONSTRUCTION PROGRESS REPORT NO. 7

FIVE-IN-ONE BRIDGE AND DAM STRUCTURE
Cedar Rapids, Linn County, Iowa

March 8, 1978

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This is the last in a series of quarterly reports issued for the Iowa Department of Transportation on the construction progress of the Five-In-One Bridge and Dam located in Cedar Rapids, Iowa.

Construction of the project began in November 1975. It was originally scheduled for completion by July 1978; however, the contractor progressed at a faster rate than anticipated, and the project is now essentially complete. The upper level of the structure consists of an eight-lane bridge to carry Interstate 380 traffic across the Cedar River. The middle level roadway serves as both a replacement for the deteriorated F Avenue Bridge, located immediately upstream from the site, and a new river crossing for E Avenue. The lower level of the structure, a 680-foot long dam with ten intermediate flood control gates, replaces an existing but deteriorated dam located a short distance upstream. The new dam consists of four submergible taintor gates and six vertical lift gates. The only major remaining item of work is to complete installation of the electrical power circuits, control circuits, and control equipment necessary to operate the ten dam gates.

The contractor maintained a consistent rate of construction over the contract period. All supporting piers and retaining walls were completed by December 31, 1976. Roadway beams, the roadway slab and curbs for Relocated F Avenue were completed by March 31, 1977. The

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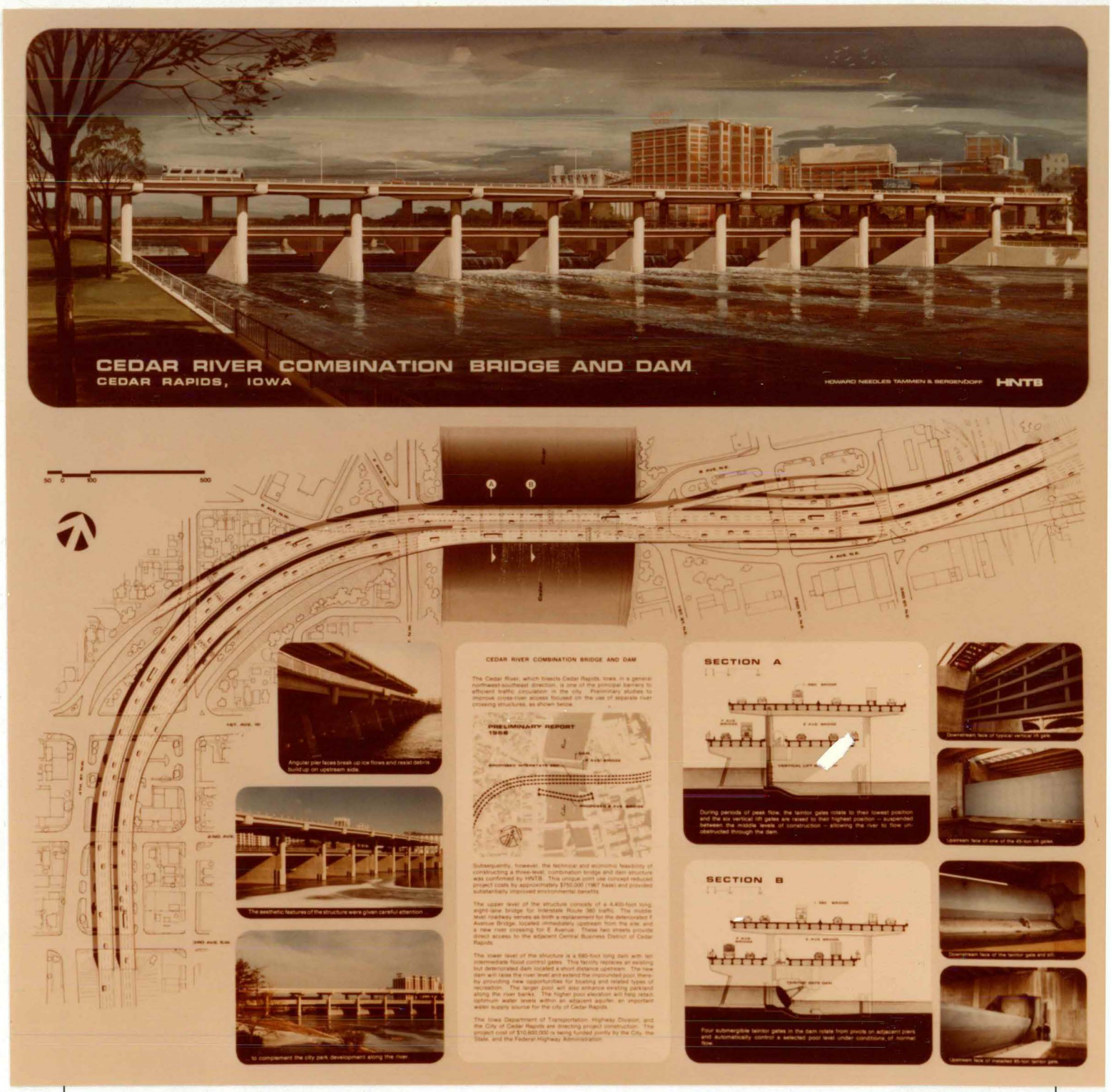
vertical lift gates and four taintor gates were installed and test-operated by June 30, 1977. The roadways for Relocated E Avenue and for the I-380 freeway were completed by September 30, 1977. Although the project is essentially complete, traffic cannot be diverted onto Relocated E and F Avenues or I-380 until the approaches to the structure are completed. Construction of the approach roadways is being performed by another contractor.

The total cost of the project was $11,100,000. Construction contracts amounted to $10,600,000; the cost of engineering supervision, inspection and testing was $500,000. The project was jointly funded by the City of Cedar Rapids ($5,400,000), the Iowa Department of Transportation ($700,000), and the Federal Highway Administration ($5,000,000).

It has been both a challenge and a pleasure to be involved in this unique but practical project from preliminary planning through construction. HNTB gratefully acknowledges the contribution of Mr. Ned L. Ashton, Consulting Engineer, and Mr. Donald J. Canney, Mayor of Cedar Rapids, who first suggested that the vehicular crossings and new dam be combined into one structure.

HNTB entered the Five-In-One Bridge and Dam in the 1978 Engineering Excellence Awards Competition sponsored by the American Consulting Engineers Council (ACEC). A photograph of the panel prepared for this competition is shown on page 4. The panel text describing the project and two selected photographs from the panel are shown more clearly on pages 5 and 6.

The Consulting Engineers Council of Missouri recently awarded First Prize in the statewide Engineering Excellence competition to the Five-In-One Bridge and Dam, making the project eligible for the ACEC national competition to be held in Washington, D.C., in April.



Photograph of the Cedar River Combination Bridge and Dam panel prepared by HNTB and entered in the 1978 Engineering Excellence Awards Competition sponsored by the American Consulting Engineers Council.

On January 31, the Consulting Engineers Council of Missouri notified HNTB that the entry was awarded First Prize in the statewide competition, making it eligible for the national competition in Washington, D.C.

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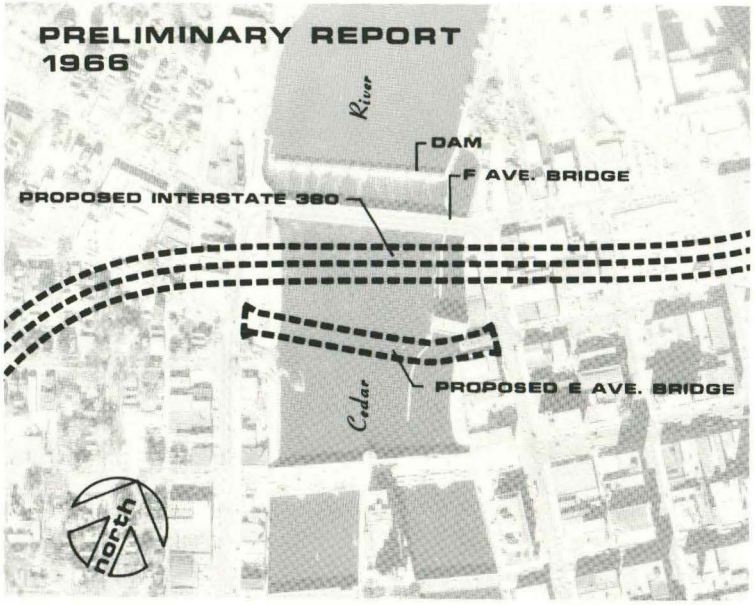
CEDAR RIVER COMBINATION BRIDGE AND DAM

The Cedar River, which bisects Cedar Rapids, Iowa, in a general northwest-southeast direction, is one of the principal barriers to efficient traffic circulation in the city. Preliminary studies to improve cross-river access focused on the use of separate river crossing structures, as shown below.



Subsequently, however, the technical and economic feasibility of constructing a three-level, combination bridge and dam structure was confirmed by HNTB. This unique joint use concept reduced project costs by approximately $750,000 (1967 base) and provided substantially improved environmental benefits.

The upper level of the structure consists of a 4,400-foot long, eight-lane bridge for Interstate Route 380 traffic. The middle level roadway serves as both a replacement for the deteriorated F Avenue Bridge, located immediately upstream from the site, and a new river crossing for E Avenue. These two streets provide direct access to the adjacent Central Business District of Cedar Rapids.

The lower level of the structure is a 680-foot long dam with ten intermediate flood control gates. This facility replaces an existing but deteriorated dam located a short distance upstream. The new dam will raise the river level and extend the impounded pool, thereby providing new opportunities for boating and related types of recreation. The larger pool will also enhance existing parkland along the river banks. The higher pool elevation will help retain optimum water levels within an adjacent aquifer, an important water supply source for the city of Cedar Rapids.

The Iowa Department of Transportation, Highway Division, and the City of Cedar Rapids are directing project construction. The project cost of $10,600,000 is being funded jointly by the City, the State, and the Federal Highway Administration.

Descriptive text displayed on award-winning panel.

Upstream face of one of the four 85-ton submergible taintor gates. Each of these gates is 16 feet high, 6 feet thick, and 60 feet long.

View of the structure looking northeast from the west bank city park development.

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