



"C" AVENUE, N.E.
Cedar Rapids, Iowa

Project Report #7

August, 1991



Engineers and municipal authorities in growing numbers of communities are frequently confronted with the challenge of modernizing an existing corridor of roadway to meet traffic demands generated by industrial, commercial or residential expansion.

Cedar Rapids' City Engineer Richard C. Ransom retained the services of Shive-Hattery Engineers and Architects, Inc. to prepare grading and Portland cement concrete (PCC) paving for 1.08 miles of C Avenue, N.E. from Blairs Ferry Road to 1,400 Ft. north of Boyson Road. Traffic data showed 1990 AADT of 9,300 VPD, expanding to 21,500 VPD with 2% trucks in the year 2010.

The design selected provided for a five-lane, 65-Ft. wide, back-to-back-of-curb pavement section which consisted of four 12 Ft. driving lanes, a 12 Ft. continuous left turn lane and 2.5 Ft. curb and gutter sections. Construction details specified 9 In. standard Class C PCC with Iowa Department of Transportation (IDOT) Class 3 coarse aggregate durability on a 6 In. granular subbase. Fly ash and water-reducing admixtures were permitted in the 34,491 SY of mainline concrete.

In a 2,210 Ft. long section south of Boyson Road, an existing 24-to-36 Ft. wide segment of the existing PCC slab was in suitable condition for salvage and reuse. Plans called for furnishing 680 CY of Class C concrete for placement of a 4 In. bonded overlay on the existing 6,110 SY of pavement. The overall 65 Ft. wide pavement section was obtained by adding from 2.5 Ft. to 24.5 Ft. of concrete widening on each side of the overlaid slab.

Prior to placing the bonded overlay, the pavement and joints of the existing slab were cleaned and repaired as necessary. Repairs included full and partial depth patches, repair of longitudinal joints and cleaning, routing and sealing of longitudinal and transverse joints. To tie the widening units to the existing slab and overlay, #5 x 36 In. long epoxy-coated deformed steel bars were spaced at 30 In. intervals, centered on the existing pavement edge and then pinned to the top of the existing slab prior to overlay. A longitudinal joint 3/8 In. wide by 1 1/8 In. deep was cut at the joint between the overlaid slab and the new concrete widening, and subsequently sealed with backer rope and hot-poured sealer material. Longitudinal and transverse

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contraction joints were required to conform to IDOT L-2 or K-2 standards, but spacing would not exceed 15 Ft. except to match existing joints in pavement under the bonded overlay.

Following the July 17, 1990 letting (Project No. M-0883(1)-81-57), a contract was awarded to F & E Paving, Inc. of Cedar Rapids, Iowa in the total amount of \$1,672,355.13. The completion date was specified as August 30, 1991 with 130 working days. The pavement surface was required to meet Chart B for smoothness. The 9 in. standard concrete was bid at \$17.40/SY and the 4 in. bonded overlay cost \$9.06/SY plus \$2.00 for preparation. Concrete was supplied by Hawkeye Ready Mix, Inc. of Hiawatha.

The "C" Avenue pavement rehabilitation project serves as an outstanding example of meeting today's construction demands through innovative technology with a concrete solution. The project owner, engineers, contractor and supplier received the Iowa Concrete Paving Award for Excellence in Design and Construction in the FAUS funding category in 1991.

Additional information may be obtained by contacting the Iowa Concrete Paving Association at (515) 278-0606.



(Photographs provided by Shive-Hattery Engineers and Architects, Inc. of Cedar Rapids, Iowa.)