



IOWA SCENE

WATROUS AVENUE PAVEMENT RESTORATION

Project Report #14

Des Moines, Iowa

August, 1993

During his tenure as city engineer of Des Moines, Harold Smith has initiated many innovative design concepts to accommodate the expanding traffic volumes and heavier loads generated throughout this vibrant and growing capital city of Iowa. Although bordering communities in the metropolitan area may show higher expansion rates, a combination of shifting population concentrations and resultant commuter peak flows requires not only new roads but the rehabilitation of aging existing pavements in Des Moines.

Following Smith's program of upgrading at least one major route each year, Watrous Avenue between Fleur Drive and S.E. 14th Street was selected for the 1993 project. This 2.25 mi. crosstown arterial along the south side of the Wakonda Country Club primarily serves a high density residential area which generates approximately 7,000 AADT consisting of passenger cars, few commercial trucks and a low-volume Metro Transit Authority bus route.



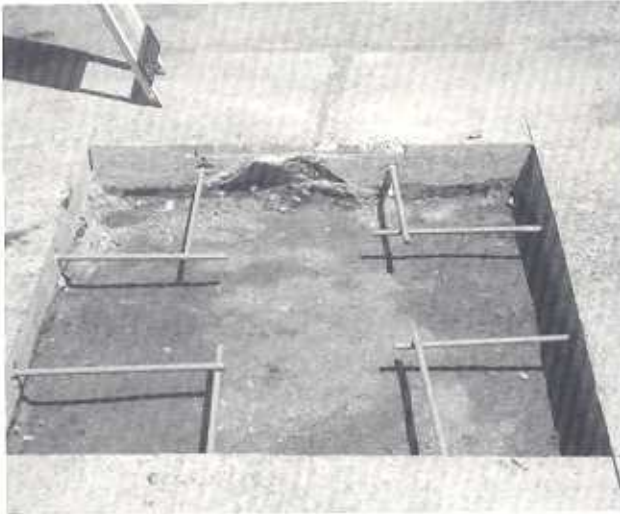
Originally constructed of high-quality Des Moines area river gravel to a uniform 7 in. design thickness, the Watrous Avenue concrete paving showed little deterioration or distress except in areas where sewers or utility service cuts had been made and differential settlements occurred in the trench. The preponderance of full-width or half-width areas requiring total removal and replacement resulted from distortions or cracking caused by nonuniform soil bearing conditions.



The old pavement was built under three independent contracts:

- 1950 construction, Fleur Drive to 1,380 ft. east; 25 ft. wide B-B, 1/2 in. rebars at 6 ft. centers, 30 ft. transverse joint spacing, longitudinal center joint fiber inserts.

- 1961 construction, 1,380 ft. east of Fleur Drive east to S.W. 9th Street, 25 ft. wide B-B, wire mesh reinforcing, 20 ft. transverse joint spacing.
- 1965 construction, S.W. 9th Street east to S.E. 14th Street, 31 ft. wide B-B, 20 ft. transverse joint spacing.



Total surface area within this facility was 38,000 SY. Having determined that the "best buy" would be to perpetuate the existing Portland cement concrete (PCC) slab by using Concrete Pavement Restoration (CPR) techniques previously developed during the landmark S.W. 63rd Street demonstration project in 1986, a design was prepared by the city that included 150 full-depth PCC patches totalling 8,500 SY, 300 SY of partial-depth patches, remove and replace 500 LF of curb, saw and seal 25,000 LF of joints, saw and seal 1,000 LF of cracks, and install 2,040 LF of 6 in. subdrain. Additional bid items covered miscellaneous excavation, crushed aggregate subbase, subgrade replacement, intakes, castings, driveway/sidewalk replacement and traffic control. All steel dowels and tie bars were required to be epoxy coated. Des Moines' standard specification mandates IDOT Class 3 coarse aggregate with an M-4 concrete mix and 48 hours cure for all full-depth patching and replacement paving. Partial-depth patching concrete shall be 04 WR (small aggregate) mix.

The low bidder was Eco-Tech Contractors, Inc. of West Des Moines in the amount of \$484,275. Local one-lane traffic was maintained within two project

stages. Stage 1 from Fleur Drive to S.W. 9th had to be completed before proceeding with Stage 2, from S.W. 9th east to S.E. 14th. A total of 75 working days was allowed.

Project plans, developed under the supervision of Jeffrey Hansen, P.E., were unique in that they showed graphically the specific location of each and every patch, excavation area, driveway, manhole, subdrain and steel rebar placement. For variations encountered during construction, justifiable field adjustments were authorized. Project management for Eco-Tech was directed by John Jones, whose task was made more difficult by heavy and frequent rains throughout Division 1 activities.

The typical concept of pavement rehabilitation using CPR methods often includes diamond surface grinding to restore desired riding qualities. However, because of the superior quality of the original concrete, lack of faulting, absence of D-cracking or joint deterioration, and the extensive patching performed, grinding was not thought to be needed nor economically justified.



Based on the design treatment and construction quality provided by the city and their contractor, Watrous Avenue is expected to efficiently and effectively serve area motorists for a great many additional years.

City Engineer Smith states that "CPR has been an ongoing part of our city's maintenance program for many years. We fully realize the long-term value of timely pavement repairs to prevent accelerated deterioration which leads to total failure and the need for expensive reconstruction."

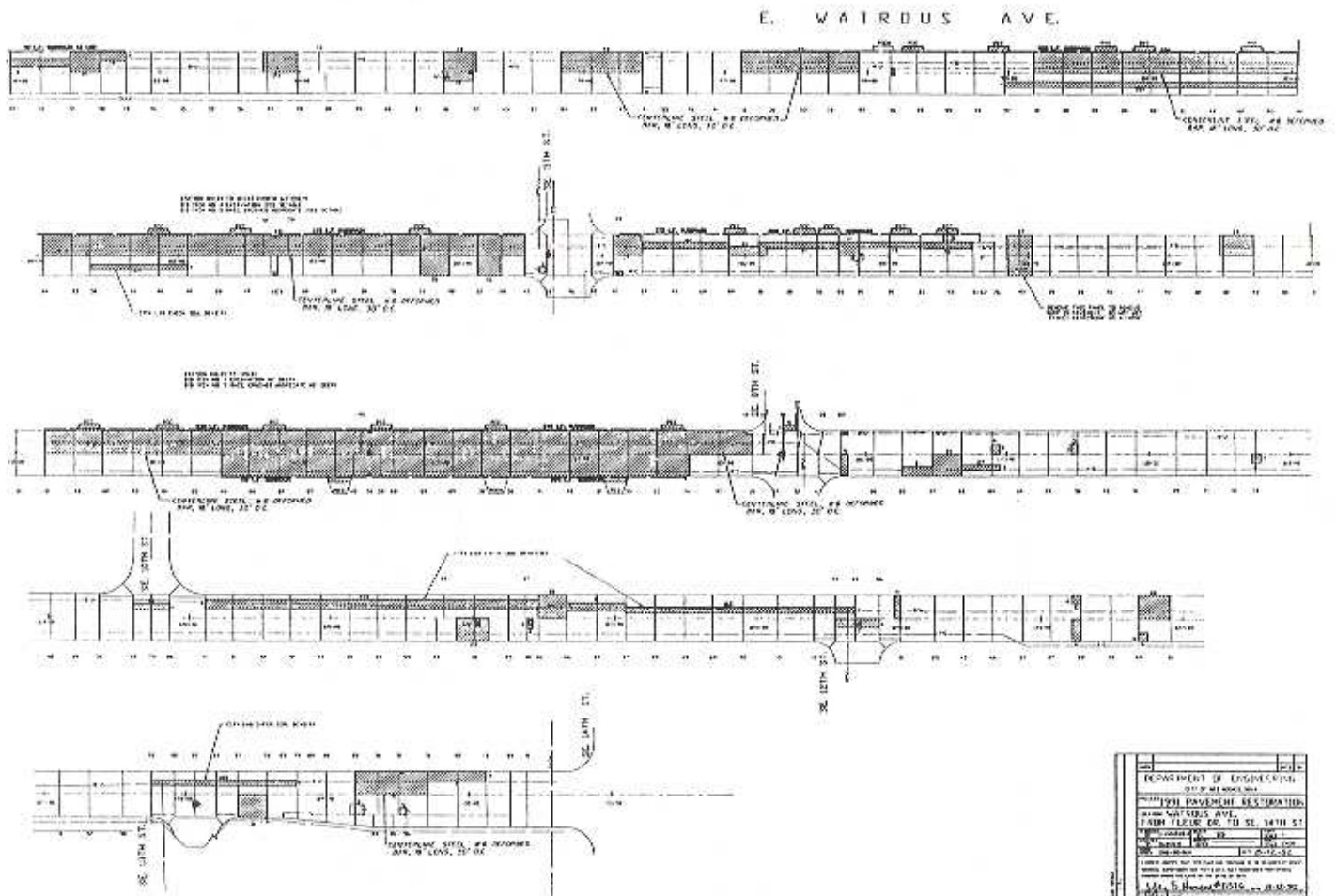
On behalf of Eco-Tech Contractors, Inc., Vice-President, John Gillotti feels that "Like a good landlord, the city engineering department keeps the street repairs minimal by addressing them early. After building several CPR projects, Eco-Tech Contractors believes the city of Des Moines has an excellent CPR program."

Additional information about this project may be obtained by contacting:

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NO.	DESCRIPTION OF WORK	DATE
1	1991 PAVEMENT RESTORATION	10/11/91
2	FROM FLOOR DE TO ST. 14TH ST	
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