SAUK VALLEY COLLEGE BOARD OF TRUSTEES MEETING
Third Floor Conference Room, 3L14
July 9, 1979 8:00 P.M.

A. Call to Order

B. Roll Call

C. Written Communications from Visitors

D. Recommended Actions:

1. Approval of minutes as submitted
2. Resignation
3. ICCTA Dues
4. Working cash fund
5. Printing bids (class schedule mailers)
6. Working cash bonds
7. Other items

E. Old Business:

1. Affirmative action report by architect
2. Tuition receipts and credit hours
3. Other items

F. New Business:

1. Report from Raths, Raths, & Johnson
2. Other items

G. Presidents's Report

1. Student trustee report
2. Minutes of committee meeting
3. Ill. Board of Higher Ed - Enrollment Projections
4.
5. Other items

MINUTES OF THE SAUK VALLEY COLLEGE BOARD OF TRUSTEES MEETING

July 9, 1979

The Board of Trustees of Sauk Valley College met in regular meeting at 8:00 p.m. on July 9, 1979 in the Board Room of Sauk Valley College, Rural Route #1, Dixon, Illinois.

Call to Order: Chairman Reigle called the meeting to order at 8:00 p.m. and the following members answered roll call:

John Fassler	Kay Fisher
Lorna Keefer	Ann Powers
Juanita Prescott	William Reigle
Bruce Yearian	

Absent: Oscar Koenig

Minutes: It was moved by Member Keefer and seconded by Member Powers that the Board approve the minutes of the June 25 meeting and the June 26 adjourned meeting. Motion voted and carried.

Resignation: It was moved by Member Prescott and seconded by Member Keefer that the Board accept with regret the resignation of Richard Fortner, instructor in the AD Nursing program, and authorize replacing this position. In a roll call vote the following was recorded: Ayes Members Fassler, Fisher, Keefer, Powers, Prescott, Reigle, and Yearian. Nays-0. Motion carried.

Arrival: Member Oscar Koenig arrived at 8:03 p.m.

ICCTA Dues: It was moved by Member Prescott and seconded by Member Koenig that the Board approve the payment of the first-half of the ICCTA dues for the 1979-80 year. In a roll call vote, all voted aye. Motion carried.

Working Cash Fund: It was moved by Member Keefer and seconded by Member Koenig that the Board give the treasurer of the district approval to borrow temporary operating funds from the Working Cash Fund as required for operating purposes. In a roll call vote, all voted aye. Motion carried.

Class Schedule Mailers: It was moved by Member Koenig and seconded by Prescott that the Board accept the bid in the amount of $19,475 from the B.F. Shaw Printing Company for the printing and direct mailing of five SVC class schedules for the 1979-80 year. In a roll call vote, all voted aye. Motion carried.

Working Cash Fund Bonds:

It was moved by Member Koenig and seconded by Member Prescott that the Board acknowledge receipt of bids for the Working Cash Fund bonds from the following three banks

Rock Falls National Bank - 5% for $125,000
Dixon National Bank - 5½% for $125,000
First National Bank - 5½% for $125,000 (qualified for an opinion)

and accept the bids from the Rock Falls National Bank and Dixon National Bank as presented. In a roll call vote, the following was recorded: Ayes Members Fassler, Fisher, Keefer, Koenig, Powers, Prescott, Reigle and Yearian. Nays-0. Motion carried.

Report on Accessibility for the Handicapped:

Architect John McLane was present at the Board meeting and outlined his recommendations to bring the college building into compliance for handicapped students and visitors. This matter was referred to the administration for their recommendations.

Tuition Receipts and Credit Hour Comparisons:

The enclosed financial data relating to tuition receipts and credit hour comparisons for the past five years was presented to the Board by Dean Edison for information purposes.

Discussion was held on enrollment trends across the state and the effect of an enrollment decline at Sauk Valley.

Building Repairs:

Dean Edison reported on building repairs currently being evaluated by Raths, Raths & Johnson. He submitted a preliminary report dated June 19 and told the Board there would be another report by July 23, 1979.

President's Report:

The student trustee did not have a report. Dr. Cole reported on the committee meeting minutes, Illinois Board of Higher Education report on enrollment projections, and the ACCT annual convention in Detroit.

Adjournment:

Since there was no further business, it was moved by Member Prescott and seconded by Member Fisher that the Board adjourn. The next regular meeting will be July 23. In a roll call vote, all voted aye. Motion carried. The meeting adjourned at 9:30 p.m.

Respectfully submitted:

Lorna Keefer

Lorna Keefer, Secretary

X-3

ICCTA

Executive Director
David L. Viar

Illinois Community College Trustees Association

3085 Stevenson Drive
Springfield, Illinois 62703
Telephone: 217/529-3115

July 1, 1979

STATEMENT

TO: DR. George Cole, President
Sauk Valley College
RR 1
Dixon, Illinois 61021

FROM: Chris Ringhausen, ICCTA Treasurer Chris Ringhausen

SUBJECT: Statement of 1979-80 Illinois Community College Trustees Association Dues

Each college is billed for one-half the annual dues on July 1, 1979 and the second billing will be sent on January 1, 1980. The first billing is based on the 1978-79 annualized full-time equivalent student enrollment (taken from official figures on the apportionment claims submitted by the colleges to the Illinois Community College Board) with an adjustment being made in the January billing on the difference between the actual enrollment and the enrollment reported at the time of the ICCTA billing.

The ICCTA dues are calculated according to the following formula which was established in 1976. You will note again there is no increase in the dues formula for 1979-80. In fact, because of decreasing enrollments, 29 districts are being assessed lower dues than last year.

$1.20/ student for the first 4,000 FTE
$ .60/student for the next 6,000 FTE
$550 flat fee per community college district

If you have any questions concerning this statement, please contact the ICCTA Office.

FIRST HALF ICCTA DUES (to be adjusted according to the official 1978-79 annualized full-time equivalent enrollment in January):

Enrollment - 1627

Dues	- $976.20
Flat Fee	- 550.00
Total	$1,526.20

Thank you.

cc: William Reigle, Chairman
Juanita Prescott, ICCTA Representative

SAUK VALLEY COLLEGE

RURAL ROUTE ONE, DIXON, ILLINOIS 61021

DATE July 9, 1979

MEMORANDUM

TO: Dr. George E. Cole, President

FROM: Ralph Gelander

RE: APPROVAL OF A CONTRACT FOR PRINTING AND DIRECT MAILING FIVE 1979-80 COLLEGE CLASS SCHEDULES

Two bids have been received for the printing and direct mailing of five class schedules for the college throughout the 1979-80 year. The five mailers include the following:

1) One for each of the regular fall and spring semester class schedules;

2) One for each of the Community Services fall and spring semester class schedules; and,

3) One combined mailer to include the summer session schedule and the President's Report to the community.

The following bids were received following appropriate legal notice publication in the Dixon Evening Telegraph and the Sterling Daily Gazette:

1) A rate of $3,895 per mailer was received from the B.F. Shaw Printing Company (publishers of the Dixon Evening Telegraph), for a total bid of $19,475.

2) A bid of $3,964 per mailer was submitted by H.C. Johnson Press, Inc., Rockford, for a total bid of $19,820.

For the past four years the B. F. Shaw Printing Co. and the H. C. Johnson Press, Inc., have been the sole bidders for this contract. In each case, the B. F. Shaw Printing Co has been the low bidder.

I am attaching copies of each of the two bids submitted as well as copies of the legal notice and the printing specifications which I prepared.

RECOMMENDATION: I recommend approval of the low bid of $19,475 submitted by the B. F. Shaw Printing Co., Dixon, IL.

RG:pre

SAUK VALLEY COLLEGE

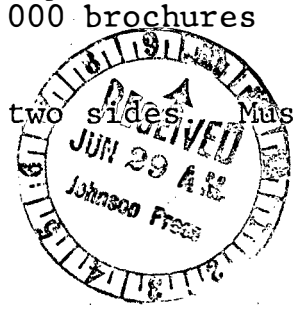
Printing Specifications

1979-80 Class Schedules

SAUK VALLEY COLLEGE
R. R. #1
Dixon, Illinois 61021

DESCRIPTION: Five 16-panel folded brochures listing the classes to be offered during the 1979-80 school year.

QUANTITY: Size of each panel: 3½" x 22" - Fully opened sheet will be 22" x 28". Total order of 40,000 brochures for each of the five mailers.



NO. OF PAGES: One (1) page with 8 panels on each of two sides. Must bleed all four edges on both sides.

COLORS: Two (2) colors, 2 sides.

PAPER: 50# Offset White.

COMPOSITION: Bidder must do all design, layout, composition and keyline.

PHOTOGRAPHS: Bidder will provide photographic service under direction of the college.

ARTWORK: Will be provided by Sauk Valley College.

HALFTONES: Six (6) square halftones. Quote additional halftones.

PROOFS: Keyline proofs required - final blueline proof.

BINDING: Folded to 7" x 10½".

DELIVERY: Bidder must mail to all occupants in attached zip code area, postage not included, with balance of order to Sauk Valley College, F.O.B.

SCHEDULE: Copy will be submitted to printer 15 working days prior to mailing. Final proof required in 8 working days.

Quotation will be based on 5 separate brochures based on the above specifications. P.O. will be placed for all 5 jobs at once; billing will be done by individual job. The printing contract will cover the school year from July 1, 1979 through June 30, 1980.

Bid Closing Date: Before 10 a.m. July 3, 1979

40,000 $99.10 @ per 1,000 = $3964.00

Cost per additional halftone — $5.00

H.C. JOHNSON PRESS
BY GENE TOEPFER

Office of the Assistant to the President

SAUK VALLEY COLLEGE

Printing Specifications

1979-80 Class Schedules

DESCRIPTION: Five 16-panel folded brochures listing the classes to be offered during the 1979-80 school year.

QUANTITY: Size of each panel: 3⅔" x 22" - Fully opened sheet will be 22" x 28". Total order of 40,000 brochures for each of the five mailers.

NO. OF PAGES: One (1) page with 8 panels on each of two sides. Must bleed all four edges on both sides.

COLORS: Two (2) colors, 2 sides.

PAPER: 50# Offset White.

COMPOSITION: Bidder must do all design, layout, composition and keyline.

PHOTOGRAPHS: Bidder will provide photographic service under direction of the college.

ARTWORK: Will be provided by Sauk Valley College.

HALFTONES: Six (6) square halftones. Quote additional halftones.

PROOFS: Keyline proofs required - final blueline proof.

BINDING: Folded to 7" x 10¼".

DELIVERY: Bidder must mail to all occupants in attached zip code area, postage not included, with balance of order to Sauk Valley College, F.O.B.

SCHEDULE: Copy will be submitted to printer 15 working days prior to mailing. Final proof required in 8 working days.

Quotation will be based on 5 separate brochures based on the above specifications. P.O. will be placed for all 5 jobs at once; billing will be done by individual job. The printing contract will cover the school year from July 1, 1979 through June 30, 1980.

Bid Closing Date: Before 10 a.m. July 3, 1979

40,000 $3,895 @ per 1,000 $97.375

Cost per additional halftone $7.00 EACH

Office of the Assistant to the President B.F. SHAW PRINTING CO.

4-2

ADMINISTRATIVE COUNCIL MINUTES

June 25, 1979

1. Budget Workshop

Dr. Cole reviewed the budget documents prepared for tomorrow's workshop with the Board of Trustees.

2. Summer Enrollment

Walt Clevenger reported that summer enrollment to date showed credit hours at 5,228 as compared to last year's figures of 4,511. Fall preregistration of 4,563 hours lags behind last year's total of 5,491.

3. RAMP

Considerable discussion was held on enrollment projections following a request by Walt Clevenger for a five-year projection for the RAMP report. Dean Sagmoe noted the potentially negative impact of high gasoline prices, Dean Foster suggested changes in the schedule would allow students to attend classes on a two-day/week basis; Dr. Cole cited the need for new instructional programs to attract students.

It was decided to survey students in the Fall to determine the impact of the gas shortage on class attendance. It was agreed to include enrollment growth projections as follows:

FY 80	3%
FY 81	2%
FY 82	2%
FY 83	2%
FY 84	0

4. Job Classification Committee

Dr. Cole requested that Don Foster re-activate the Job Classification Committee. Although a request from Walt Clevenger precipitated this action, any supervisor who feels that they have individuals misplaced on the salary schedule may submit a request for reconsideration to this committee.

mv

E-2

July 2, 1979

TO: BOARD OF TRUSTEES AND PRESIDENT COLE

FROM: Robert Edison

RE: Board Meeting, July 9, 1979

I am enclosing herein the financial data related to the spring semester of 1979 tuition receipts and tuition deductions. This form is a part of the audit information which is established and recorded by semester as a requirement to equate mid-term credit hours with the net tuition receipts of the college. I have utilized the spring data for the past five (5) years as a matter of comparative information rather than skipping between semesters which usually indicates a greater non-comparable variable than the attached.

The second form indicating mid-term credit hours I have formulated as a means of following the actual mid-term enrollment pattern since the inception of the State-established funding categories for reimbursement purposes. It renders to the reader the historical enrollment at Sauk Valley College plus a breakdown of the various funding categories within the total enrollment. Though the data is not necessarily conclusive since fluctuations and variables have occurred it is felt that it does represent trends which were subject to interpretation.

I will be happy to answer any questions which might be presented in reference to the attached report.

RE:fsb

Attachments

cc: Audit file

NET TUITION RECEIPTS AND DEDUCTIONS

	Deductions from Tuition	Spring 1975	Spring 1976	Spring 1977	Spring 1978	Spring 1979
1.	Tuition Refunds	5,597.20	13,026.00	13,925.80	12,745.60	12,051.00
2.	Employee Waivers	2,982.20	4,198.60	6,846.00	6,003.00	6,413.40
3.	Bad Debts	529.20	526.00	135.00	3,403.67	4,632.30
4.	Senior Citizens	3,302.00	7,669.20	17,235.00	18,738.00	23,794.00
5.	EOG Waivers	966.40	1,635.00	1,735.50	1,133.00	2,185.60
6.	Total Deductions	13,377.00	27,054.80	39,877.30	42,023.27	49,076.30
7.	Actual Tuition Receipts	291,089.68	394,271.45	362,901.05	323,344.57	355,866.40
8.	Actual Mid-term Cr.Hrs.	22,394	28,108	26,645	22,970	22,051
9.	Tuition Received/Mid Term Credit Hours (Line 7÷8)	13.00	14.03	13.62	14.08	16.14
10.	Tuition Charged/Cr.Hr.	13.00	14.00	14.00	15.00	17.00
11.	Variable/Credit Hours	-0-	+ .03	- .38	- .92	- .86

MID-TERM CREDIT HOUR ENROLLMENT BY STATE FUND CATEGORIES

	Bacca-laureate	Business, Public Serv. Personal Srv.	Data Proc. Commerical Technology	Nat. Sc. Industrial Technology	Health Technology	Vocational Skills	Remedial Develop-ment	General Studies	Total
Summer, 1974	1879	521	51	93	517	27	117	38	3243
Fall, 1974	10592	4378	302	1354	2131	206	1022	451	20436
Spring, 1975	11310	4890	321	1655	1853	373	1374	618	22394
Total for 1974-75	23781	9789	674	3102	4501	606	2513	1107	46073
Summer, 1975	3108	1301	81	481	535	70	511	41	6128
Fall, 1975	12734	6637	480	3201	2608	415	1991	405	28471
Spring, 1976	13273	6538	421	3106	2244	313	1561	652	28108
Total for 1975-76	29115	14476	982	6788	5387	798	4063	1098	62707
Summer, 1976	2663	1180	72	505	626	26	355	126	5553
Fall, 1976	11630	5528	559	3064	2484	592	1869	565	26291
Spring, 1977	12812	5676	501	3305	2422	354	1259	316	26645
Total for 1976-77	27105	12384	1132	6874	5532	972	3483	1007	58489
Summer, 1977	2031	854	63	455	738	41	240	50	4472
Fall, 1977	11367	5894	562	2601	2607	310	1987	317	25645
Spring, 1978	10872	5272	515	2426	2240	320	1024	301	22970
Total for 1977-78	24270	12020	1140	5482	5585	671	3251	668	53087
Summer, 1978	2121	1101	75	221	673	12	327	29	4559
Fall, 1978	10152	5279	506	2418	2703	246	1456	258	23018
Spring, 1979	10411	4658	458	2483	2395	379	1064	203	22051
Total for 1978-79	22684	11038	1039	5122	5771	637	2847	490	49628
Summer, 1979									
Fall, 1979									
Spring, 1980									
Total Hours 74-75	23781	9789	674	3102	4501	606	2513	1107	46073
Total Hours 75-76	29115	14476	982	6788	5387	798	4063	1098	62707
Total Hours 76-77	27105	12384	1132	6874	5532	972	3483	1007	58489
Total Hours 77-78	24270	12020	1140	5482	5585	671	3251	668	53087
Total Hours 78-79	22684	11038	1039	5122	5771	637	2847	490	49628

SAUK VALLEY COLLEGE

RURAL ROUTE ONE, DIXON, ILLINOIS 61021

DATE July 9, 1979

MEMORANDUM

TO: Dr. Cole

FROM: John Sagmoe

RE: FINANCIAL AID HOLD PROGRAM SPRING 1979

Attached is information related to the Financial Aid Hold Program, Spring Semester 1979.

As you know, many of our students often appear a week or a few days prior to Registration. A number of these students are also seeking financial aid counseling and assistance. Based on an analysis of the data provided by the individual student, the Director of Financial Aids makes a needs analysis of the probability of the student qualifying for financial aid. If the student data projects qualification, the student is given the appropriate forms to be filled out and processed by the various state and federal agencies. Based on the projection that the student will get federal aid, and realizing that the processing time will be at least 60 days or more, the student is allowed to register and placed on financial aid hold. The money is collected when the student grant is received later in the semester.

The actual processing by the state and federal government of financial aid forms during the past few years has taken as long as two to three months. Therefore, by assisting these students and making a needs analysis based on information they give the Financial Aids Office, we have been able to help a large number of students begin their college career. At the same time, there is a certain amount of risk involved, and each year we do carry bad debts. I note that our bad debts have increased somewhat this past spring semester over the previous spring. About half of this increase could be attributed, I suppose, to the increase in tuition. The other factors include a host of personal and individual behavioral reasons. It appears, however, that the program did generate 1548 credit hours for the college as opposed to 257 credit hours of bad debts. Perhaps even more important, we did help the 130 students who fulfilled their financial responsibilities to the college begin their educational careers.

I have summarized the Financial Aid Hold figures as supplied by the Financial Aids Office, and I am also attaching a memo from Ron Marlier with his perceptions of the program.

JES/jmb
attachments

FINANCIAL AID HOLD SUMMARY

SPRING SEMESTER 1979

Total number of students placed on hold	157
Total number of credit hours placed on hold	1805
Total number of students carried as "bad debts" June 30, 1979	27
Total number of credit hours carried as "bad debts" June 30, 1979	257

Dollar Analysis

Tuition:	Collected - 1548 hrs @$18 =	$27864
	Bad debt - 257 hrs @$18 =	$4626
State Aid:	(using budget figure of 22.50 per hr)	
	Collected - 1548 hrs @$22.50 =	$34830
Total revenue generated by Financial Aid Hold students:		$62694
Total bad debts generated by Financial Aid Hold students:		$4626

SAUK VALLEY COLLEGE

RURAL ROUTE ONE, DIXON, ILLINOIS 61021

DATE July 6, 1979

MEMORANDUM

TO: John Sagmoe

FROM: Ron Marlier

RE: Tuition Bad Debts, 1979

Relative to your memo dated July 5, 1979 regarding an increase in tuition bad debts I submit the following report. The report Mr. Edison is submitting to the Board on July 9, 1979 regarding tuition bad debts in the amount of $4642.30 agrees with the figures we are carrying in Financial Aids.

We put on tuition hold 157 students at the start of the spring semester carrying a total amount of credit hours of 1805 hours. Of this amount, 257.35 hours remain unpaid with little or any chance of recovery. In other words, 86% of 1805 credit hours are actually paid while 14% are written off as bad debts. This is also consistant with Mr. Edison's report. It appears from Mr. Edison's report that there is a difference of 1229 in increased bad debts from the spring of 78 to the spring of 79; however, I would like to reflect on some of my thoughts regarding the reason why the amount of money may have increased. Tuition increased from $16 to $18 which might have a tendency to inflate the amount of tuition monies unpaid.

There is no way the Financial Aid Office can control students changing their minds about attending or failing to follow through on the commitment because of a host of reasons, from financial to personal, to changes in plans, to mobility and finally disappearance. If you look through the records of previous reports we did not deny that this would create some risk and we did not infer that bad debts would not exist. I feel the performance, with the amount of money lost to bad debts vis-a-vis the amount of tuition money collected (which we would not have collected if we had not deferred) justifies the continuance of the program. However, I do feel that some alternate method might be more appropriate such as the program used by Bradley University where they loan students their direct cost pending receipt of their financial aid package. I would like to remind you that the Tuition Hold program originated because of problems beyond our control, namely the turn over in processing time of the Illinois State Scholarship Commission and in many cases Federal Financial Aid Programs. This situation seems to have reversed itself for Fiscal 1980 (Fall 1979) since all agencies have more or less been able to notify students of results within a 60-day turn over period. Unfortunately, most Sauk Valley College students do not apply until registration or thereafter.

Do we set dead lines for application, do we continue to defer students to Financial Aid Hold or do we go back to the old system of "No Dough, No Go"? While we lost $4632 in tuition on a gamble, we could have lost $32,490 in tuition on a full 1805 credit hours if we had turned these students away.

July 3, 1979

TO: BOARD OF TRUSTEES

FROM: Robert Edison Bob

RE: Board Meeting, July 9, 1979.

During the last board meeting I indicated to Mr. Reigle that I had received one report and I anticipated the receipt of an additional report from Raths, Raths & Johnson in reference to building repairs. I am transmitting herewith copies of the first Raths report with the additional report yet to be received but verbally promised to be complete in the very near future.

In our discussion of this report I have also scheduled Raths, Raths & Johnson, Inc. to be available at the Board meeting of July 23, 1979, to answer any questions which the Trustees wish to have answered. I have been assured that the second report will also be available by that date and I will send each trustee a copy of said report as soon as received.

You are now receiving the totality of the first report with the exception of numerous pictures which were also submitted but which I cannot effectively duplicate. Should any trustee member wish to review these pictures I will make them available as soon as possible so they hopefully could travel from trustee to trustee if desired.

RE:fsb

Encl.

REPORT ON THE EVALUATION OF PROCEDURES FOR THE REPAIR OF CONCRETE CRACKING AT SAUK VALLEY COLLEGE

RRJ 78055 June 19, 1979

REPORT ON THE EVALUATION OF PROCEDURES FOR THE REPAIR OF CONCRETE CRACKING AT SAUK VALLEY COLLEGE

PREPARED FOR

SAUK VALLEY COLLEGE
DIXON, ILLINOIS

PREPARED BY

RATHS, RATHS & JOHNSON, INC.
STRUCTURAL ENGINEERS
835 MIDWAY DRIVE
WILLOWBROOK, ILLINOIS 60521

June 19, 1979

REPORT CONTENTS

REPORT ON THE EVALUATION OF PROCEDURES FOR THE REPAIR OF CONCRETE CRACKING AT SAUK VALLEY COLLEGE

The structural engineering firm of Raths, Raths & Johnson, Inc. (hereinafter RRJ), Hinsdale, Illinois, was retained in April, 1978 to perform investigative test work at Sauk Valley College in Dixon, Illinois. The purpose of the test work was to develop a viable procedure for the repair of existing cracking in the perimeter cast-in-place concrete construction of the structure.

This report presents a summary of the scope of the investigative work performed by RRJ, followed by itemized recommendations for repair of the structure developed from the results of the investigative work.

SCOPE OF EVALUATION

The scope of RRJ's evaluation of procedures for the development of a repair scheme for the cracking distress in the concrete construction at the structure was confined to the following categories:

1. Review of the history of the cracking and related problems at the structure.
2. Field testing of methods of crack repair at the structure.
3. Review of current crack repair technology.
4. Field review of the current state of the structure.

RESULTS OF REVIEW OF PROBLEM HISTORY

The cracking which presently exists in the cast-in-place concrete construction at the structure has existed since the structure was erected in 1968-69. The owners of the structure have observed the problem in the form of continuing maintenance required to correct damage caused by water leakage into the interior of the structure, and in the form of an unpleasant architectural appearance for the structure.

A photographic overview of the concrete cracking problem at the structure is appended to this report. Photographs P1 through P4 show what have been

identified as four fundamental types of concrete construction around the perimeter of the structure. Photographs P5 through P14 show the type, size, extent, and general nature of the cracking. These photographs typify the cracking observed around the perimeter of the structure.

A number of investigations into the causation of the concrete cracking has been made by various agencies and firms at selected points in time throughout the structure's history. Each investigative effort and subsequent report resulted in the development of a series of probable causes for the concrete cracking.

The investigative test work performed by RRJ and presented herein was based on the results of a major field and in-office investigative effort performed by RRJ in 1976. That investigative work was presented in a RRJ report issued May 27, 1976, and entitled, "Evaluation of Concrete Cracking - Sauk Valley College". Several basic conclusions were presented in that report and are directly quoted below for the reader's reference:

1. "Most concrete cracks on the building exterior appear to have resulted from omissions in the original design relative to flexural behavior, and to the steel reinforcement specified in terms of the reinforcing bar sizes, locations, and spacings."
2. "The overall evaluation has indicated that little or no additional concrete cracking should be expected."
3. "The concrete construction of the college appears to be of below average quality."

Two fundamental factors are common to the results of the RRJ engineering effort just mentioned, and to the results of all previous engineering studies that RRJ has knowledge of. First, the cracking in the cast-in-place construction at the structure occurred during or very shortly after the structure was constructed. Secondly, very little additional cracking is expected to occur in the concrete during the life of the structure under anticipated atmospheric conditions and loading situations.

Another historical characteristic of the structure important to the development of a successful crack repair program is the fact that the sealants and caulking used to seal the perimeter curtain wall window, door, and expansion joint elements have continually failed at points all around the

structure. This, similar to the cracking in the concrete construction, has resulted in a continuing maintenance problem caused by wind and water leakage into the structure through the improperly and inadequately sealed joints. Aggravating the problem, continual replacement or repair of the failed sealant materials has apparently been made on a stop-gap, or as-needed basis at sporadic locations throughout the structure. These new sealants appear to have generally been the wrong type and were in many cases apparently improperly installed. Photographs P15 through P21 illustrate the various types of curtain wall sealant failures and problems.

The continuing curtain-wall sealant and related water leakage problems make identification of the magnitude of the contribution of the concrete cracking problem to the total amount of water leakage into the structure difficult to achieve.

RESULTS OF FIELD TESTING OF METHODS OF CRACK REPAIR

A series of field tests was made at the structure during the late summer and early fall of 1978 as itemized below:

1. Moisture Penetration Tests: Conducted to establish the minimum concrete crack width requiring repair to eliminate moisture penetration into the structure.
2. Epoxy Injection Tests: Conducted to establish the construction procedures and costs required for potential repair of the concrete cracking by pressure injecting a two component epoxy resin into each crack and aesthetically treating each crack so repaired.
3. Decorative Waterproofing Coating Tests: Conducted to evaluate the effectiveness of an application of a decorative yet functional waterproofing coating to the structure to simultaneously seal the cracks in the concrete and to provide a uniform color and architectural appearance for the structure.

An explanation of these tests and the results obtained therefrom follow:

Moisture Penetration Tests

Water penetration tests were conducted on an exposed concrete beam at the ceiling level just outside the south entrance to the large student study area near the east end of the structure. This beam was selected because of its typical representation of crack frequency, crack widths, crack locations, crack types, crack lengths, and for the convenient accessibility to both sides of the beam.

During the tests, water was sprayed from a hose under moderate pressure onto one surface of the beam at two independent points along its length in an attempt to simulate wind driven rainfall. This was done to observe the minimum width crack through which rainfall would be expected to pass. It was found that the water readily penetrated all cracks in the beam, including the smallest cracks having widths of approximately 0.003 inch to 0.005 inch.

Epoxy Injection Tests

Three areas of representative cracked concrete construction were tested with epoxy injection methods. This testing was accomplished with the assistance of Lance Construction Supplies, Inc., Chicago, Illinois. They are representatives of the Adhesive Engineering Company, San Carlos, California, which licenses an epoxy injection system called the "Structural Concrete Bonding Process". This process was utilized in the epoxy injection test work at this structure.

The Structural Concrete Bonding Process is representative of various currently available methods of repairing cracked concrete sections. Epoxy injection of concrete cracks is accomplished by use of equipment which automatically mixes and proportions two epoxy resin components in line and then places this mixed resin into the cracks under low pressure. The epoxies used provide 100% solid mixed resin so that no resin volume change occurs during curing of the epoxy. The injection process is initiated by sealing each crack in the concrete surface with a thin surface applied epoxy. Small sections are left unsealed along each crack at regular intervals, into which small straws are placed to serve as entry ports, or points where the epoxy will be injected. This process is illustrated in photograph P22. The epoxy

is then injected into the lowermost port on the crack until it starts to flow out of the first entry port above. It is then injected into that port until it in turn appears in the next port above, and so forth on up the side of the beam until the entire crack is injected and completely filled with epoxy. Photograph P23 illustrates this procedure.

Upon full curing of the resin, the concrete section is essentially returned to its uncracked strength. The mechanical and physical strength properties of the low viscosity epoxy materials used are actually significantly greater than those of the concrete substrate itself.

Various architectural treatments are available for covering epoxy injected cracks. A method developed by Adhesive Engineering and employed by Lance Construction was tested at each of the three test areas. As a brief explanation of this process, the surface of each crack is sealed with a thixotropic epoxy resin which is tinted to match the surface concrete color after the epoxy injection is completed. A minute sand aggregate is then sprayed onto this still-liquid thixotropic epoxy which serves as a matrix material. The aggregate is applied until it fully covers and obscures the matrix, and thus the crack itself. Photograph P24 shows several cracks treated in this fashion. It is noted that the cracks shown in that photograph had been outlined in chalk and were also marked with their widths at various points along their lengths. Photographs P25, P26, and P27 show views of epoxy injected cracks after similar architectural treatment.

The three areas of epoxy crack repair were observed after a six month exposure to the elements, including exposure to multiple freeze-thaw cycles during the full course of a severe winter. The results from these tests follow:

1. One of the three epoxy injected beams experienced one additional vertical crack near one of its supports. The crack had a width of 0.005 inch, maximum. The other two beams remained uncracked.
2. No apparent deterioration of the concrete occurred near the cracks on any of the three beams.
3. No apparent deterioration or imperfections in the epoxy bonded cracks or their architectural surface treatments

occurred or were evident on any of the three beams.

4. The widely variant existing surface color of the concrete on each test beam made matching of the colors of the thixotropic surface epoxy sealant and the aggregate applied to the colors of the concrete virtually impossible along the full length of a crack and even among adjacent cracks on the same beam. An example of the surface color variation on a typical concrete beam at the structure appears in photograph P35.
5. The surface cosmetic treatment employed at each crack stands out slightly from the existing flat surface of the concrete. This results in a shadowing characteristic in sunlight which causes the cracks treated in this fashion to be readily discernible to the casual observer. This characteristic is apparent in photograph P27.

The additional cracking at one of the three test beams illustrates the need for providing horizontal relief along the length of epoxy injected beams to account for thermal movements in the beams (i.e. expansion and contraction with varying atmospheric conditions). This cracking was fully predictable and within expectations.

In addition to the physical observations made above, detailed records were kept during the epoxy injection test work indicating the quantities of epoxy used, the amounts of time required for application of the epoxy and the cosmetic surface treatment, the magnitude of the setup and cleanup operations associated with this type of work, etc. All are thus available for development of cost and time of repair estimates for any related work in the future.

Decorative Waterproofing Tests

This testing was also conducted with Lance Construction personnel. The purpose of these tests was to determine if a thin coat, textured and color tinted, surface waterproofing coating could be applied to the cracked cast-in-place construction to successfully bridge and thus seal the smaller cracks and prevent water penetration.

The waterproofing test work was conducted on the western one-half of an exposed concrete beam which is located just outside the south entrance to the student study area near the east end of the structure. This is the same beam previously described as having been used for water penetration tests and epoxy injection tests.

One vertical face of the test area on the beam was treated with waterproofing products manufactured by Textured Coatings of America, Inc., Los Angeles, California. The individual cracks were first sealed with a flexible patching material applied along the length of each crack. Photographs P28 and P29 illustrate this process. This flexible patching material is designed to bridge the crack voids and allow limited thermal expansion and contraction movements at the crack voids while preventing water penetration through the crack.

After application of the patch material was completed, a prime coat and a finish coat of the waterproofing were applied over the patch material and to the entire test area of the beam. The treated portion of the beam is shown in photograph P30.

The opposing vertical face of the test area on the beam was treated in a manner similar to that just described, but with products manufactured by the Sonneborn-Conntech Co., Minneapolis, Minnesota. Two different manufacturers of similar products were thus utilized to provide a degree of product performance comparison in this type of work.

As was done for the epoxy injection test work on the other half of the beam, the waterproofing coating was allowed to stand for six months, including exposure to the full winter freeze-thaw cyclical process. The test area was then observed and the test results follow:

1. Both types of coatings applied to the test beam developed hairline cracks directly over the underlying cracks in the concrete which were previously measured to be larger than 0.005 inch in width.
2. No surface deterioration of the two types of decorative waterproofing coatings was observed other than the cracking noted above.

The appearance of the new cracking in the surface waterproofing coating

was expected. However, its magnitude and frequency indicate the need to eliminate thermal movement at each of the cracks by permanent epoxy injection repair and providing flexible joints at regular intervals along the beams or walls to accommodate the thermal movement at controlled locations. The tests indicate that these two types of decorative waterproofing coatings are capable of bridging cracks 0.005 inch in width, and smaller. However, this size of crack generally would not be expected to admit normal wind driven rainwater into the structure even without treatment. Thus, these types of waterproofing coatings can be considered to be independently functional in this situation in only a decorative sense to improve the appearance of the structure. To be effectively employed, they must be used with a permanent crack repair and control jointing program.

RESULTS OF REVIEW OF CRACK REPAIR TECHNOLOGY

Current crack repair technology can be divided into four basic categories:

1. Non-structural, non-aesthetic crack repair
2. Non-structural, aesthetic crack repair
3. Structural, non-aesthetic crack repair
4. Structural, aesthetic crack repair

A discussion of each, with discussion of the potential application to this project follows:

Non-Structural, Non-Aesthetic Crack Repair

A characteristic common to all cracks that exist in the exterior concrete construction of the college is that they are all subject to thermal movement (expansion and contraction). A crack that is repaired by filling it with a flexible joint sealant material will be able to accommodate thermal movement within the limits of the flexibility of the sealant applied and the size of the crack; and thus within the same limitations, prevent water penetration through the crack. This is by nature, a non-structural crack repair, as the mechanical or physical load carrying capacity of the concrete member remains unchanged; i.e. a cracked concrete section still remains along

with reduced section and strength properties in the member.

Application of flexible joint sealants to each crack in the concrete basically negates any attempt to treat the structure to improve its architectural appearance. Several factors form the basis for this judgement:

1. The cracks that are filled with a flexible joint sealant material generally must first be routed out to create the proper joint geometry and physically accommodate the sealant. This invariably results in a repaired crack which is much more visible than a crack left untreated.
2. Joint sealants applied to cracks generally stand out slightly from the concrete surface after their application. Additionally, matching the color of the sealant to the color of the concrete can be a significant problem. This problem is amplified by the fact that the color of the concrete on this structure varies widely, even across the length and depth of any individual member. This is dramatically illustrated in photograph P35. As in Item 1, these problems also generally result in a crack which is more readily visible after repair than before.
3. Decorative architectural surface coatings cannot be placed over the top of flexible joint sealant materials. This is because the coatings do not have the flexibility or tensile strength necessary to accommodate the thermal movement in the flexible joint, as previously illustrated by the waterproofing test work. Thus, the coatings cannot be used to obscure the cracking and are basically functionless in this type of repair program.

Based on these characteristics, a non-structural, non-aesthetic crack repair program is not considered acceptable for this structure.

Non-Structural, Aesthetic Crack Repair

There is one basic type of non-structural, aesthetic repair which might be considered for this structure. This involves construction of an architectural metal or thin precast aggregate panel cladding over all areas of

the structure to cover the cracking in the concrete. This cladding would have to be physically separate from the concrete construction behind and would require considerable flashing and joinery work to accommodate the complex physical nature of this structure. This aesthetic repair concept is considered impractical for use on this structure unless the owner is willing to accept the associated considerable expense. It should be noted that this repair would result in a uniform and potentially very pleasing architectural effect on the structure.

Structural, Non-Aesthetic Crack Repair

Structural crack repair consists of injecting the crack with an epoxy resin having strength properties after curing that exceed those of the concrete. This restores the concrete to its original uncracked strength. This is identical to the Structural Concrete Bonding Process utilized in the RRJ epoxy injection test work.

Epoxy injection, in addition to permanently restoring the strength properties of cracked concrete, permanently seals the cracks against water penetration through the concrete.

Structural repair of concrete exposed to weather and static loading generally cannot be employed alone due to the following characteristics:

1. Thermal movements must be accommodated in the concrete. Epoxy injected cracks will not yield, thus the concrete will crack again between the cracks that are repaired if no relief is provided.
2. Structural cracks, i.e. those caused by tensile stresses induced by loads or forces on the concrete section exceeding the cracking stress of the concrete, cannot be repaired by epoxy injection unless the loading is reduced or eliminated from the concrete section. If the excessive tensile stresses are allowed to remain in the concrete section after crack repair by epoxy injection, the concrete most assuredly will crack adjacent to or between the cracks so repaired.

As explained in the section of this report entitled "Results of Review of Problem History", the cracking at this structure is basically non-structural

in nature, but each crack is subjected to full thermal movements induced by the exterior exposure. Thus, a structural epoxy injection repair scheme would be fundamentally acceptable only if regular flexible joint relief is provided to accommodate the thermal movements in the concrete.

Repair by epoxy injection generally results in a physical appearance of the cracks in the concrete surface which is significantly worse than the untreated cracks. The epoxy resin is generally dark in color depending on the manufacturer, and spillage along the crack from the injection entry ports is inevitable. Additionally, the epoxy that is initially used to seal the surface of the crack before it is injected stands out away from the concrete surface slightly, presenting a somewhat objectionable appearance similar to that observed with the use of flexible joint sealants. Photographs P25 through P27 illustrate this problem. This surface epoxy sealer can be ground away after curing of the injected epoxy, but this does not fully obscure the crack from view. Thus, if the cracks are not further treated, this repair results in a potentially objectionable physical appearance to users of the structure and is practical in that aspect only if the owner is willing to accept that fact.

Structural, Aesthetic Crack Repair

This repair scheme is identical to the epoxy injection repair just discussed, except that the cracks so repaired are obscured or covered with some form of architectural coating or treatment. Critical to the application of the coatings is the requirement for initially providing flexible joints in the concrete at regular intervals to accommodate thermal movement.

A wide variety of architectural coatings and surface treatments is currently available. Unfortunately, the physical characteristics of each manufacturer's product are unique. Application of such coatings in such a large scale as would be required on this structure could only be effectively implemented by testing of one or more visually acceptable products either on a portion of the structure, or on a test setup in a laboratory which creates simulated accelerated weathering.

RESULTS OF FIELD REVIEW OF THE CURRENT STATE OF THE STRUCTURE

During the course of the test work performed at the structure the current state of the structure was closely reviewed. This was done primarily for the purpose of comparing the distress and problems currently existing in the structure to those that have been previously observed by RRJ during the course of field work done in association with earlier investigative work in 1976. The following statements present the results of this comparative review:

1. Very little additional cracking of the exterior concrete construction has occurred in the past three years.
2. The widths of the cracking in the concrete construction are slightly larger than those measured three years ago (based on spot checks only).
3. No visible rusting or staining of the concrete surfaces is occurring due to corrosion of internal reinforcing steel in the concrete.
4. The black staining of the upper levels of the structure due to rainwater running off the roof and over the deteriorating perimeter neoprene roof flashing is significantly worse than the staining observed in 1976. (Refer to photographs P31 through P34). This staining is accumulating in the cracks in the beams at the upper level concrete construction, accentuating the objectionable appearance of each crack. (Refer to photograph P33).
5. The curtain wall sealants around the entire perimeter of the structure are still failing and in a general state of distress and disrepair.
6. Several areas of surface spalling of concrete spandrel beams immediately below or above curtain wall windows are present that were not observed in 1976. (Refer to photographs P17 and P20).

RECOMMENDATIONS FOR REPAIR OF CONCRETE CRACKING

The field investigative test work and the in-office investigative and

review work outlined above resulted in the development of the proposals for recommended repair of the concrete cracking in the structure as listed below. For introductory purposes, the following definitions of terms used in the proposals are necessary for appropriate presentation of each:

"Functional" repair of concrete cracking: A repair concept which addresses only the repair of the concrete cracking for the purpose of solving any structural problems and preventing water leakage into the interior of the structure. No consideration is given to the appearance of the structure in this proposal.

"Aesthetic" repair of concrete cracking: A repair concept which addresses restoration of cracked concrete construction to its original intended architectural appearance, or potential improvement of same.

The repair proposals follow:

PROPOSAL A: Recommendations for Functional Repair of the Concrete Cracking in the Structure

1. The curtain wall (windows, doors, etc.) sealants and caulkings should be replaced around the entire perimeter of the structure as soon as is possible. This will necessitate the prior removal of all such materials which are now in place throughout the structure.

2. The cast-in-place concrete spandrel beams around the entire perimeter of the structure which have an exterior exposure on one vertical face and an internal exposure on the opposing face should receive the following treatments in conjunction with the sealant work described above:

   a. The existing vertical rustication joints in each spandrel beam which are at ten foot horizontal spacings should be cut to the maximum depth possible, (say 2 inches to 3 inches), cleaned, and sealed with a flexible polyurethane backup rod and two component urethane sealant.

   b. Following completion of the sealant work required above, all existing cracks in these spandrel beams should be epoxy injected with a method similar to the Structural Concrete Bonding Process licensed by the Adhesive Engineering Co., San Carlos, California, which was utilized in the RRJ field test work.

c. The areas of surface spalling of the concrete spandrel beams immediately below or above the curtain wall windows, as shown in photographs P17 and P20, should be patched and repaired with an epoxy concrete.

3. All areas of flutted cast-in-place concrete walls around the entire perimeter of the structure should receive the following treatments:

   a. All horizontal concrete pour cold joints at the top and bottom of the cast-in-place walls where they abut the adjoining cast-in-place spandrel beams should be sealed along their entire lengths with a flexible polyurethane backup rod and two component urethane sealant, as above.

   b. All vertical cracks (and horizontal cracks if they exist) in the cast-in-place walls should be routed to the width and depth necessary at each location to achieve the proper joint geometry, and then should be sealed along their full lengths with a flexible polyethylene backup rod and two component urethane joint sealant, as above.

4. A yearly inspection program should be established to monitor any possible corrosion of the internal reinforcing steel of the concrete members not epoxy injected or sealed.

PROPOSAL B: Recommendations for Functional and Aesthetic Repair of the Concrete Cracking in the Structure

1. Perform all items of work outlined in Items 1 and 2 of the repair PROPOSAL A above.

2. All of the remaining cast-in-place beams and girders with external exposure, including the sun-shade beams and their purlin supports should receive the following treatments:

   a. The existing rustication joints in each beam which are at ten foot horizontal spacings should be saw cut where necessary to the maximum depth possible, (say 2 inches to 3 inches, or more), cleaned, and sealed with a flexible polyurethane backup rod and two component urethane sealant, as above. Additional and similar joints should be created where necessary to act as crack control joints to accom-

modate thermal movements in the concrete.

b. Following completion of the sealant work required above, all existing cracks in these cast-in-place beams and girders should be epoxy injected, as above.

3. One small area of combined cast-in-place spandrel beam and flutted wall construction, such as that shown in photograph P34, should be selected and treated as follows:

   a. All horizontal concrete pour cold joints at the top and bottom of the cast-in-place walls where they abut the adjoining cast-in-place spandrel beams should be sealed along their entire lengths with a flexible polyurethane backup rod and two component urethane sealant, as above.

   b. A new system of vertical crack control joints must be created in the flutted wall sections by cutting vertical joints in each wall section to the maximum depth possible (say 2 inches to 3 inches) at approximate ten foot spacings to correspond with the existing rustication joints in the adjacent spandrel beams. These joints should then be cleaned and sealed with a flexible polyurethane backup rod and two component urethane sealant, as above.

   c. Following completion of the sealant work above, all existing vertical cracks (and horizontal cracks if they exist) in the cast-in-place concrete walls should be epoxy injected with the Structural Concrete Bonding Process, or equivalent, as above.

4. The existing neoprene rubber strip sheet flashing all around the perimeter of the various roof levels of the structure should be sampled at representative locations and tested to determine the extent of deterioration due to direct exposure to ultraviolet rays in the sunlight. The appropriate option, based on the results of this test work, should be implemented as listed below:

   a. If the tests indicate the flashing will not last for any significant period of time, (say two to three years), it should be fully replaced.

   b. If the tests indicate the flashing will serve its intended waterproofing function for some length of time yet to come, a repair program should be developed for the flashing to eliminate the problem of black staining of the upper levels of the concrete on this struc-

ture due to rainwater running across the flashing and carrying the deteriorating neoprene down onto the concrete. When a suitable repair program is developed, it should be implemented on a small section of this structure. The concrete construction immediately below the repair area should be cleaned to remove this black staining so that any potential new staining from the repair area will be visible.

5. Following all of the work specified above, the structure should be allowed to stand for approximately one year during which time the following items should be accomplished:

   a. The entire curtain wall system of the structure should be very carefully monitored by the maintenance staff of the college for the determination of the adequacy of the newly applied sealants and epoxy injection work in preventing water penetrations into the interior of the structure. A record should be kept of any areas that leak, including a description of the type of atmospheric conditions present when the leaking occurred, and the general extent and probable source point of the leakage.

   b. The area of combined cast-in-place spandrel beam and flutted wall construction tested per item 3 above should be carefully monitored for both water leakage into the structure as above, and for potential formation of new vertical cracks in the concrete walls intermediate to those that were repaired.

   c. Simultaneous with the work above, additional research should be conducted into the availability and physical characteristics of various architectural or decorative surface coatings for potential use on the structure. Several coatings should then be selected as produced by independent manufacturers that satisfy both the architectural desires of the owners of the structure and the physical requirements for a successful treatment of the building. If the manufacturers of each product are unable to provide appropriate documented test data for the weathering characteristics of their products, a laboratory test program to simulate the structure in an accelerated weathering condition of approximately twenty to thirty years should then be developed and implemented to establish the

long-term weatherability and performance of the various coatings. The results of these laboratory tests, or the manufacturer's tests, should then be used to make final selection of the best coating for the structure.

d. If applicable, the test area of repaired neoprene rubber strip sheet flashing should be carefully monitored to determine the effectiveness of the repairs in preventing further decay of the flashing and associated black staining of the concrete on the side of the structure below. New repairs can be tried during this one year period if the first fails until a suitable repair procedure is found.

6. At the end of the one year observation period and test program described above, the following program should be followed:

   a. Based on the results of the water leakage monitoring program for the curtain wall system, spot repairs can be made if required for any areas not initially properly sealed, etc.

   b. If applicable, based on the results of the repair test program for the neoprene rubber strip sheet flashing, the entire perimeter flashing should be repaired.

   c. Following repair or replacement of the perimeter roof flashing as determined appropriate, the upper levels of the structure should be cleaned to remove the black stains caused by the original defective flashing.

   d. Utilizing the information obtained from the monitoring of the test repair area of the combined cast-in-place spandrel beam and flutted wall construction, the appropriate option below can be selected and implemented.

      (1). If no new cracking occurs in the concrete walls, and all leakage has stopped, the rest of the similar areas throughout the structure may be treated identically to the process which was outlined in Item 3 above. Then the entire building can be coated with the coating selected.

      (2). If new cracking develops in the concrete walls, this new cracking in this area and the existing cracking in similar areas of construction in the structure must be treated as follows:

a. The vertical cracks in the concrete walls must be routed to the proper width and depth and then must be sealed with a flexible polyurethane backup rod and two component urethane sealant, as above.

b. Outside the test area, and in all similar areas of construction, the horizontal concrete pour cold joints at the top and bottom of the cast-in-place walls where they abut the adjoining spandrel beams should be sealed with the same system.

c. The entire exposed concrete surfaces of the structure can then be coated with the decorative coating selected.

However, with this option, the coating cannot be applied over the cracks in the flutted cast-in-place concrete walls as they will be moving joints. Unfortunately, they will still be visible after application of the decorative coating. This is a characteristic that cannot be overcome if the cast-in-place concrete walls will not perform as hoped under the initial test work, by cracking at the newly created control joints and not intermediate to them.

REPORT SUMMARY

Two basic recommendations for repair of the cracked concrete construction of the structure have been presented. In brief review, they are:

PROPOSAL A. An option for repairs to eliminate water leakage into the structure without regard for the physical appearance of the structure.

PROPOSAL B. An option for repairs to eliminate water leakage into the structure and to restore the original intended architectural appearance of the structure, or potentially improve on that appearance.

With the presentation above, it is left for the owners of the structure to select the option considered appropriate. It is noted in very general terms that the cost of Proposal B would significantly exceed that of Proposal A, as Proposal B entails a much broader scope of work. Upon selection

of the appropriate option, contract documents and a detailed cost estimate for the various stages of work can be prepared.

Indifferent to the selection of the desired option, it is recommended that the joint sealant replacement work on the perimeter curtain wall construction be completed at the earliest opportunity. It is estimated that this phase of the repair work would cost $50,000 to $60,000 complete. This includes field test work required to establish the water penetration paths into the building and the sealant replacement procedure required to eliminate same.

Respectfully submitted,

RATHS, RATHS & JOHNSON, INC.

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