

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

ACTUARIAL VALUATION
AS OF JUNE 30, 1985



S. Goldstein and Associates
consulting actuaries



November 8, 1985

The Trustees of the Retirement
Board of the Park Employees'
Annuity and Benefit Fund of Chicago
Administration Building
425 East William L. McFetridge Drive
Chicago, Illinois 60605

Gentlemen:

Re: Actuarial Valuation As Of June 30, 1985

I am pleased to submit my actuarial report on the financial position and funding requirements of the Park Employees' Annuity and Benefit Fund of Chicago as of June 30, 1985.

The report consists of 10 sections and 3 appendices as follows:

	<u>Page No.</u>
Section A	1
Section B	1
Section C	2
Section D	2
Section E	3
Section F	4
Section G	5
Section H	6
Section I	7
Section J	7
Appendix 1	8
Appendix 2	9
Appendix 3	11

I would be pleased to discuss any aspects of this report with you at your convenience.

Respectfully submitted,

Sandor Goldstein
Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Park Employees' Annuity and Benefit Fund as of June 30, 1985. The purpose of the valuation was to determine the financial position and funding requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total actuarial liability	\$ 304,224,080
2. Actuarial value of assets	215,375,538
3. Unfunded actuarial liability	88,848,542
4. Funded Ratio	70.8%
5. Employer's annual funding requirement of normal cost plus interest on the unfunded liability	\$ 9,601,093
6. Estimated employer contribution for the year	7,035,492
7. Estimated deficiency in employer contribution	2,565,601
8. Tax multiple required for employer contribution to be sufficient to meet funding requirement	1.50
9. Actuarial present value of accumulated plan benefits	\$ 218,653,809
10. Actuarial present value of vested accumulated plan benefits	213,905,997
11. Actuarial present value of credited projected benefits	274,574,444

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the Fund. The membership of the Fund as of June 30, 1985 on which the valuation was based is summarized in Exhibit 1. It can be seen that there were 4,053 active members, 1600 pensioners, and 952 surviving spouses included in the valuation. The total active payroll as of June 30, 1985 was \$87,382,680.



Exhibit 1Summary of Membership Data

1. Number of Members.	
(a) Active Members	4,053
(b) Members Receiving	
(i) Retirement Pensions	1,600
(ii) Surviving Spouse's Pensions	952
(iii) Children's annuities	66
2. Annual Salaries	
(a) Total salary	\$ 87,382,680
(b) Average Salary	\$21,560
3. Total accumulated employee contributions	\$ 74,432,885
4. Annual Pension Payments	
(a) Retirement Pensions	\$ 10,092,300
(b) Surviving Spouse's Pensions	2,368,212
(c) Children's Annuities	64,320

Assets. The asset values used for the valuation were based on the asset information contained in the unaudited statement of assets as of June 30, 1985 prepared by the Fund. For purposes of the valuation, the book value of the assets of the Fund less the amount of current liabilities was used. The resulting actuarial value of assets was \$215,375,538. The development of this value is outlined in Exhibit 2.

Exhibit 2Actuarial Value of Assets

1. Cash and short term investments at cost	\$ 9,916,996
2. Receivables	4,131,335
3. Investment in bonds at amortized cost	162,961,190
4. Investments in equities at cost	21,889,741
5. Investments in real estate at cost	13,005,010
6. Accrued interest on investments	3,711,559
7. Total book value of assets	<u>\$215,615,831</u>
8. Current Liabilities	240,293
9. Actuarial Value of Assets (7.-8.)	<u>\$215,375,538</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the Fund in effect as of June 30, 1985 as provided in Article 12 of the Illinois Pension Code. A summary of the principal provisions of the Fund is provided in Appendix 2.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

The actuarial assumptions used for the valuation were based on an experience analysis of the Fund for the three year period 1981-1984. On the basis of that experience analysis, a number of changes in actuarial assumptions were



made from those used for the Fund's previous valuation. The most significant changes in assumptions were an increase in the interest rate assumption from 7% to 7.5% and an increase in the salary progression assumption from 5% to 5.5%. We have estimated that the aggregate effect of the changes in these two assumptions was to decrease the Fund's actuarial liability by approximately \$14.6 million. The actuarial assumptions used for the current valuation are outlined in Appendix 1.

In our opinion, the actuarial assumptions used for the valuation are reasonable in the aggregate, taking into account Fund experience and future expectations, and represent our best estimate of anticipated experience.

The entry age actuarial cost method was used for the valuation. This is the same actuarial cost method that was used in previous valuations.

E. Actuarial Liability

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 3.)

As of June 30, 1985, the total actuarial liability is \$304,224,080, the actuarial value of assets is \$215,375,538, and the unfunded actuarial liability is \$88,848,542. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 70.8%.



Exhibit 3.Actuarial Liability

1. Actuarial Liability For Members in Receipt of Benefits

(a) Money purchase component of annuities to retirees	\$ 50,898,254
(b) Fixed benefit component of annuities to retirees	14,691,363
(c) Annual increases in retirement annuity	18,165,230
(d) Annual increases to employee annuitants	1,242,067
(e) Survivor annuities to survivors of current retirees	13,102,125
(f) Lump sum death benefits	1,219,759
(g) Survivor annuities to current survivors	<u>19,960,215</u>
(h) Total	\$119,279,013

2. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$131,548,333
(b) Annual increase in retirement annuity	26,133,374
(c) Pre-retirement survivor's annuity	8,271,504
(d) Post-retirement survivor's annuity	14,169,080
(e) Withdrawal benefits	3,465,165
(f) Pre-retirement death benefit	887,866
(g) Post-retirement death benefit	469,745
(h) Total	\$184,945,067

3. Total Actuarial Liability	<u>\$304,224,080</u>
4. Net Present Assets	<u>\$215,375,538</u>
5. Unfunded Actuarial Liability	<u>\$ 88,848,542</u>
6. Funded Ratio	70.8%

F. Employer's Normal Cost

The employer's share of the normal cost for the year beginning July 1, 1985 is developed in Exhibit 4. For the year beginning July 1, 1985, the total normal cost is determined to be \$10,708,706, employee contributions are estimated to be \$7,551,204, resulting in the employer's share of the normal cost of \$3,157,502.

Based on a payroll of \$87,382,680, the employer's share of the normal cost can be expressed as 3.6% of payroll.



Exhibit 4Employer's Normal Cost For Year Beginning July 1, 1985

1. Basic retirement annuity	\$ 5,222,897
2. Annual increase in retirement annuity	1,048,705
3. Pre-retirement survivor's annuity	459,750
4. Post-retirement survivor's annuity	550,180
5. Withdrawal benefits, including refunds	1,521,369
6. Pre-retirement death benefit	159,564
7. Post-retirement death benefit	29,099
8. Children's annuity	64,320
9. Ordinary disability benefit	1,069,137
10. Duty disability benefit	75,369
11. Administrative expenses	508,316
12. Total normal cost	\$10,708,706
13. Employee contributions	7,551,204
14. Employer's share of normal cost	<u>\$ 3,157,502</u>
15. Total payroll	<u>\$87,382,680</u>
16. Employer's share of normal cost as a percent of payroll	<u>3.6%</u>

G. Employer's Funding Requirement

The employer's funding requirement of normal cost plus interest on the unfunded liability for the year beginning July 1, 1985 is developed in Exhibit 5.

An employer contribution of normal cost plus interest on the unfunded liability is generally considered to be the minimum contribution level for public retirement systems. By paying the normal cost each year, the accruing cost of pensions is met as service is rendered by employees. By paying interest on the unfunded actuarial liability, the unfunded actuarial liability is stabilized. Although no attempt is made to pay off the unfunded actuarial liability, this approach is nevertheless considered acceptable for public retirement systems where permanence can be taken for granted and full funding is not regarded as essential.

It can be seen from Exhibit 5 that for the year beginning July 1, 1985, the employer funding requirement of normal cost plus interest on the unfunded actuarial liability amounts to \$9,601,093. Actual employer contributions for the year are estimated to amount to \$7,035,492. Thus, employer contributions for the year are expected to fall short of the employer funding requirement by \$2,565,601. This deficiency in employer contributions can be expressed as 2.9% of payroll.

Employer contributions to the Fund come from a tax levied upon all taxable property in the city of Chicago. The amount of tax presently levied is 1.10 times the amount of employee contributions made 2 years previously. The 1.10 is known as the tax multiple. We have estimated that in order to provide sufficient employer contributions to meet the funding requirement of normal cost plus interest on the unfunded actuarial liability, a tax multiple of 1.50 would be needed.



Exhibit 5Funding Requirement For Year Beginning July 1, 1985

1. Employer's share of normal cost	\$ 3,157,502
2. Interest on the unfunded actuarial liability	<u>6,443,591</u>
3. Employer's funding requirement of normal cost plus interest on the unfunded actuarial liability	\$ 9,601,093
4. Estimated employer contribution for the year	<u>7,035,492</u>
5. Estimate of amount by which employer contributions are expected to fall short of the funding requirement of normal cost plus interest on the unfunded liability	<u>\$ 2,565,601</u>

H. VALUE OF ACCUMULATED PLAN BENEFITS

Financial Accounting Standards Board Statement Number 35 (FASB No. 35) sets forth certain standards of financial accounting and reporting for the financial statements of defined benefit pension plans. Although the statement is applicable to state and local governments, the implementation date for state and local government pension plans has been extended indefinitely.

In Exhibit 6, we have presented the actuarial values required under FASB No. 35 as of June 30, 1985. As shown in Exhibit 5, the actuarial present value of accumulated vested plan benefits is \$213,905,997 and the actuarial present value of accumulated plan benefits is \$218,653,809.

The same actuarial assumptions were used in the calculation of these actuarial present values as were used in the regular actuarial valuation except that no salary increase assumption was used.

FASB No. 35 calls for a comparison of the actuarial present value of accumulated plan benefits with the net assets available for benefits, with investments valued at market value. On this basis, the net assets available for benefits amounts to \$199,635,821 and the ratio of the net assets available for benefits to the actuarial present value of accumulated plan benefits is 91.3%.

Exhibit 6Value of Accumulated Plan BenefitsActuarial Present Value of Accumulated Plan Benefits

1. Vested Benefits

(a) Participants Currently Receiving Benefits	\$119,279,013
(b) Other Vested Participants	<u>94,626,984</u>
(c) Total	<u>\$213,905,997</u>

2. Nonvested Benefits

3. Total Actuarial Present Value of
Accumulated Plan Benefits

\$119,279,013
<u>94,626,984</u>
<u>\$213,905,997</u>
<u>4,747,812</u>

Net Assets Available For Benefits

\$199,635,821

Ratio of Net Assets Available For Benefits To Actuarial
Present Value of Accumulated Plan Benefits

91.3%



I. Actuarial Present Value of Credited Projected Benefits

Section 22-503.1 of the Illinois Pension Code provides that for plan years ending on or after December 31, 1984, pension funds are required to disclose the actuarial present value of credited projected benefits as part of their actuarial statements. Credited projected benefits represent that portion of a participant's projected benefit based on an allocation taking into account service to date, determined in accordance with the terms of the plan, based on anticipated future compensation.

The actuarial present value of credited projected benefits would also be required to be disclosed as the standardized measure of the accrued pension benefit obligation under the Exposure Draft on disclosure of pension information for public employee retirement systems issued by the Governmental Accounting Standards Board on August 20, 1985.

We have therefore calculated the actuarial present value of credited projected benefits as part of the valuation. The results of the calculations are shown in Exhibit 7. It can be seen from Exhibit 7 that the total actuarial present value of credited projected benefits as of June 30, 1985 amounts to \$274,574,444.

Exhibit 7.

Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits	\$119,279,013
2. For active members	
(a) Basic retirement annuity	\$106,140,915
(b) Annual increase in retirement annuity	21,145,570
(c) Pre-retirement survivor's annuity	7,481,525
(d) Post-retirement survivor's annuity	11,358,732
(e) Withdrawal benefits	7,312,721
(f) Pre-retirement death benefit	1,409,138
(g) Post-retirement death benefit	446,830
(h) Total for active members	<u>\$155,295,431</u>
3. Total actuarial present value of credited projected benefits	<u>\$274,574,444</u>

J. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the Park Employees' Annuity and Benefit Fund as of June 30, 1985.

Respectfully submitted



Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402



Appendix 1.

Summary of Actuarial Assumptions and Actuarial Cost Method

Mortality Rates. The UP-1984 Mortality Table was used for the valuation.

Termination Rates. Termination rates based on the recent experience of the fund were used. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination Per 1,000 Members</u>
20	187
25	125
30	87
35	62
40	37
45	24
50	10
55 and later	0

Retirement Rates. Rates of retirement for each age from 55 to 70 based on the recent experience of the fund were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement Per 1,000 Members</u>
55	60
60	100
65	300
70	1,000

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Progression. - 5.5% per year, compounded annually.

Interest Rate. - 7.5% per year, compounded annually.

Marital Status. 75% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 2 years younger than that of the employee.

Actuarial Value of Assets. The book value of the assets of the Fund was used.

Actuarial Cost Method. The entry age actuarial cost method was used, with costs allocated on the basis of earnings.

Actuarial Assumptions Used in the Calculation of
Actuarial Present Value of Accumulated Plan Benefits

The actuarial assumptions that were used in the regular actuarial valuation were used in the calculation of the actuarial present value of accumulated plan benefits shown in Exhibit 6, except that no salary increase assumption



was used and withdrawal rates were not used in determining the actuarial present value of vested benefits.

Appendix 2

Summary of Principal Provisions

1. Membership. Any person becoming an employee of the Chicago Park District is required to become a member of the Fund, as a condition of employment, after a waiting period of 6 consecutive months.

2. Employee Contributions. All members of the Fund are required to contribute to the Fund 8 1/2% of salary as follows:

- 6 1/2% for the retirement pension
- 1% for the spouse's pension
- 1% for the automatic increase in the retirement pension

In addition, employees are required to contribute \$3.60 per month toward the cost of the single sum death benefit.

3. Retirement Pension-Eligibility. An employee may retire at age 55 with at least 10 years of service or at age 60 with 4 years of service.

If retirement occurs before age 60, the retirement pension is reduced 1/2% for each month that the age of the member is below 60. However, there is no reduction if the employee has at least 35 years of service.

4. Retirement Pension-Amount. The retirement pension is based on the average of the 4 highest consecutive years of salary within the last 10 years, at the following rates:

- 1.7% for each of the first 10 years of service; plus
- 2.0% for each of the next 10 years of service; plus
- 2.4% for each of the next 10 years of service; plus
- 2.8% for each year of service over 30

An employee who was a participant before July 1, 1971 is entitled to the pension provided under the money purchase formula if it provides a greater pension than that provided under the above fixed benefit formula.

5. Post Retirement Increase In Retirement Pension. An employee retiring at age 60 or over is entitled to automatic annual increases of 3% of the originally granted pension following 1 year's receipt of pension payments. In the case of an employee who retires before age 60, the increase begins following the later of attainment of age 60 and receipt of 1 year's pension payments.

6. Surviving Spouse's Pension. A surviving spouse is entitled to a pension upon the death of an employee while in service or on retirement. If the surviving spouse is age 60 or over and the employee or pensioner had at least 20 years of service, the minimum surviving spouse's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the age of the surviving spouse is less than 60, the pension is reduced 1/2 of



1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension under the money purchase formula, taking into account employee and employer contributions toward the surviving spouse's pension.

7. Children's Pension. Unmarried children under the age of 18 of a deceased employee are entitled to a children's pension. If either parent is living, the pension is \$100.00 per month. If no parent survives, the pension for each child is \$150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employee's final salary.

8. Single Sum Death Benefit. A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows:

- \$2,000 benefit during the 1st year of service,
- \$3,000 benefit during the 2nd year of service,
- \$4,000 benefit during the 3rd year of service,
- \$5,000 benefit during the 4th year of service,
- \$6,000 benefit during the 5th through 9th year of service,
- \$10,000 benefit if death occurs after 10 or more years of service

Upon the death of a retired member with 10 or more years of service, the \$10,000 maximum benefit is reduced to \$6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by \$1,500 for each year or fraction of a year while on retirement, but shall not be less than \$1,500.

9. Ordinary Disability Benefit. An ordinary disability benefit is payable after 8 consecutive days absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed 1/4 of the length of service, but not more than 5 years, or age 70, whichever occurs first.

10. Occupational Disability Benefit. Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability until the employee attains age 65, if disability is incurred before age 60. If disability occurs after age 60, the benefit is payable for 5 years or attainment of age 70, whichever occurs first.

11. Occupational Death Benefit. Upon the death of an employee resulting from an accident incurred in the performance of duty, the surviving spouse is entitled to an occupational death benefit of 50% of salary. Each unmarried child under the age of 18 is entitled to a benefit of \$100 per month. The combined payments to a family may not exceed 75% of the employee's final salary. The total payments are reduced by Workmen's Compensation benefits.

12. Refunds. An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55 and 60 with less than 10 years of service, and to an employee who withdraws after age 60 with less than 5 years of service.

An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.



Appendix 3

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Accrued Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Entry Age Actuarial Cost Method. A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided at a valuation date by the actuarial present value of future normal costs is called the actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.
10. Accrued Benefit or Accumulated Plan Benefit. The amount of an individual's benefit as of a specific date determined in accordance with the terms of a pension plan and based on compensation and service to that date.
11. Vested Benefits. Benefits that are not contingent on an employee's future service.



PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

ACTUARIAL VALUATION
AS OF JUNE 30, 1986

November 20, 1986

The Trustees of the Retirement
Board of the Park Employees'
Annuity and Benefit Fund of Chicago
Administration Building
425 East W.L. McFetridge Drive
Chicago, Illinois 60605

Gentlemen:

Re: Actuarial Valuation As Of June 30, 1986

I am pleased to submit my actuarial report on the financial position and funding requirements of the Park Employees' Annuity and Benefit Fund of Chicago as of June 30, 1986.

The report consists of 11 sections and 3 appendices as follows:

	<u>Page No.</u>
Section A - Purpose and Summary	1
Section B - Data Used For Valuation	1
Section C - Fund Provisions	2
Section D - Actuarial Assumptions and Cost Method	3
Section E - Actuarial Liability	3
Section F - Employer's Normal Cost	4
Section G - Employer's Funding Requirement	5
Section H - Reconciliation of Change in Unfunded Liability	6
Section I - Value of Accumulated Plan Benefits	7
Section J - Value of Credited Projected Benefits	8
Section K - Certification	9
Appendix 1 - Summary of Actuarial Assumptions	10
Appendix 2 - Summary of Principal Provisions	11
Appendix 3 - Glossary of Terms	13

I would be pleased to discuss any aspects of this report with you at your convenience.

Respectfully submitted,

Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Park Employees' Annuity and Benefit Fund as of June 30, 1986. The purpose of the valuation was to determine the financial position and funding requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total actuarial liability	\$ 329,388,693
2. Actuarial value of assets	235,219,515
3. Unfunded actuarial liability	94,169,178
4. Funded Ratio	71.4%
5. Employer's annual funding requirement of normal cost plus interest on the unfunded liability	\$ 9,953,274
6. Estimated employer contribution for the year	8,437,448
7. Estimated deficiency in employer contribution	1,515,826
8. Tax multiple required for employer contribution to be sufficient to meet funding requirement	1.30
9. Actuarial present value of accumulated plan benefits	\$ 236,875,263
10. Actuarial present value of vested accumulated plan benefits	231,805,944
11. Actuarial present value of credited projected benefits	296,745,685

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the Fund. The membership of the Fund as of June 30, 1986 on which the valuation was based is summarized in Exhibit 1. It can be seen that there were 4,370 active members, 1603 pensioners, and 984 surviving spouses included in the valuation. The total active payroll as of June 30, 1986 was \$95,185,296.

Exhibit 1Summary of Membership Data

1. Number of Members.	
(a) Active Members	4,370
(b) Members Receiving	
(i) Retirement Pensions	1,603
(ii) Surviving Spouse's Pensions	984
(iii) Children's annuities	66
2. Annual Salaries	
(a) Total salary	\$ 95,185,296
(b) Average Salary	21,782
3. Total accumulated employee contributions	\$ 80,312,188
4. Annual Pension Payments	
(a) Retirement Pensions	\$ 11,149,564
(b) Surviving Spouse's Pensions	2,607,900
(c) Children's Annuities	67,440

Assets. The asset values used for the valuation were based on the asset information contained in the unaudited statement of assets as of June 30, 1986 prepared by the Fund. For purposes of the valuation, the book value of the assets of the Fund less the amount of current liabilities was used. The resulting actuarial value of assets was \$235,219,515. The development of this value is outlined in Exhibit 2.

Exhibit 2Actuarial Value of Assets

1. Cash and short term investments at cost	\$ 13,886,821
2. Receivables	4,374,010
3. Investment in bonds at amortized cost	160,960,201
4. Investments in equities at cost	34,723,388
5. Investments in real estate at cost	17,926,159
6. Accrued interest on investments	3,539,033
7. Total book value of assets	\$235,409,612
8. Current Liabilities	190,097
9. Actuarial Value of Assets (7.-8.)	<u>\$235,219,515</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the Fund in effect as of June 30, 1986 as provided in Article 12 of the Illinois Pension Code. A summary of the principal provisions of the Fund is provided in Appendix 2.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

The actuarial assumptions used for the current valuation are the same as those used for the valuation as of June 30, 1985. These actuarial assumptions are based on an experience analysis of the Fund for the three year period 1981 to

1984. The actuarial assumptions used for the current valuation are outlined in Appendix 1.

In our opinion, the actuarial assumptions used for the valuation are reasonable in the aggregate, taking into account Fund experience and future expectations, and represent our best estimate of anticipated experience.

The entry age actuarial cost method was used for the valuation. This is the same actuarial cost method that was used in previous valuations.

E. Actuarial Liability

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 3.)

As of June 30, 1986, the total actuarial liability is \$329,388,693, the actuarial value of assets is \$235,219,515, and the unfunded actuarial liability is \$94,169,178. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 71.4%.

Exhibit 3.Actuarial Liability

1. Actuarial Liability For Members in Receipt of Benefits

(a) Money purchase component of annuities to retirees	\$ 56,849,146
(b) Fixed benefit component of annuities to retirees	16,420,617
(c) Annual increases in retirement annuity	20,148,148
(d) Annual increases to employee annuitants	1,377,651
(e) Survivor annuities to survivors of current retirees	14,758,767
(f) Lump sum death benefits	1,230,936
(g) Survivor annuities to current survivors	21,668,557
(h) Total	\$132,453,822

2. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$139,962,860
(b) Annual increase in retirement annuity	27,831,464
(c) Pre-retirement survivor's annuity	8,905,717
(d) Post-retirement survivor's annuity	15,057,435
(e) Withdrawal benefits	3,804,912
(f) Pre-retirement death benefit	902,078
(g) Post-retirement death benefit	470,405
(h) Total	\$196,934,871

3. Total Actuarial Liability	<u>\$329,388,693</u>
4. Net Present Assets	<u>\$235,219,515</u>
5. Unfunded Actuarial Liability	<u>\$ 94,169,178</u>
6. Funded Ratio	71.4%

F. Employer's Normal Cost

The employer's share of the normal cost for the year beginning July 1, 1986 is developed in Exhibit 4. For the year beginning July 1, 1986, the total normal cost is determined to be \$11,345,426, employee contributions are estimated to be \$8,221,614, resulting in the employer's share of the normal cost of \$3,123,812.

Based on a payroll of \$95,185,296, the employer's share of the normal cost can be expressed as 3.28% of payroll.

Exhibit 4Employer's Normal Cost For Year Beginning July 1, 1986

1. Basic retirement annuity	\$ 5,618,554
2. Annual increase in retirement annuity	1,127,672
3. Pre-retirement survivor's annuity	496,712
4. Post-retirement survivor's annuity	591,680
5. Withdrawal benefits, including refunds	1,690,739
6. Pre-retirement death benefit	163,017
7. Post-retirement death benefit	29,902
8. Children's annuity	67,440
9. Ordinary disability benefit	1,033,213
10. Duty disability benefit	70,897
11. Administrative expenses	455,600
12. Total normal cost	<u>\$11,345,426</u>
13. Employee contributions	<u>8,221,614</u>
14. Employer's share of normal cost	<u>\$ 3,123,812</u>
15. Total payroll	<u>\$95,185,296</u>
16. Employer's share of normal cost as a percent of payroll	<u>3.28%</u>

G. Employer's Funding Requirement

The employer's funding requirement of normal cost plus interest on the unfunded liability for the year beginning July 1, 1986 is developed in Exhibit 5.

An employer contribution of normal cost plus interest on the unfunded liability is generally considered to be the minimum contribution level for public retirement systems. By paying the normal cost each year, the accruing cost of pensions is met as service is rendered by employees. By paying interest on the unfunded actuarial liability, the unfunded actuarial liability is stabilized. Although no attempt is made to pay off the unfunded actuarial liability, this approach is nevertheless considered acceptable for public retirement systems where permanence can be taken for granted and full funding is not regarded as essential.

It can be seen from Exhibit 5 that for the year beginning July 1, 1986, the employer funding requirement of normal cost plus interest on the unfunded actuarial liability amounts to \$9,953,274. Actual employer contributions for the year are estimated to amount to \$8,437,448. Thus, employer contributions for the year are expected to fall short of the employer funding requirement by \$1,515,826. This deficiency in employer contributions can be expressed as 1.6% of payroll.

Employer contributions to the Fund come from a tax levied upon all taxable property in the city of Chicago. The amount of tax presently levied is 1.10 times the amount of employee contributions made 2 years previously. The 1.10 is known as the tax multiple. We have estimated that in order to provide sufficient employer contributions to meet the funding requirement of normal cost plus interest on the unfunded actuarial liability, a tax multiple of 1.30 would be needed.

Exhibit 5Funding Requirement For Year Beginning July 1, 1986

1. Employer's share of normal cost	\$ 3,123,812
2. Interest on the unfunded actuarial liability	<u>6,829,462</u>
3. Employer's funding requirement of normal cost plus interest on the unfunded actuarial liability	\$ 9,953,274
4. Estimated employer contribution for the year	<u>8,437,448</u>
5. Estimate of amount by which employer contributions are expected to fall short of the funding requirement of normal cost plus interest on the unfunded liability	<u>\$ 1,515,826</u>

H. RECONCILIATION OF CHANGE IN UNFUNDED ACTUARIAL LIABILITY

The net actuarial experience during the period July 1, 1985 to June 30, 1986 resulted in an increase in the Fund's unfunded actuarial liability of \$5,320,636. This increase in unfunded actuarial liability is a result of several kinds of gains and losses. The financial effect of the most significant gains and losses is illustrated in Exhibit 6.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$9,601,093, whereas the actual employer contribution for the year amounted to \$7,724,516. Thus, the employer contribution for the year fell \$1,876,577 short of meeting normal cost plus interest on the unfunded liability. Had all other aspects of the Fund's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The value of assets increased at a rate of approximately 9.2% during the year in comparison to the assumed rate of 7.5%. This resulted in a decrease in the unfunded liability of \$3,938,129. Salaries increased at an average rate of 4.5% per year in comparison with an assumed rate of 5.5%, resulting in a decrease in the unfunded liability of \$1,849,000.

The various other aspects of the Fund's experience resulted in a net increase in the unfunded actuarial liability of \$9,231,188.

The aggregate financial experience of the Fund resulted in an increase in the unfunded actuarial liability of \$5,320,636.

Exhibit 6

Reconciliation of Change in Unfunded Actuarial Liability
Over the Period July 1, 1985 to June 30, 1986

1. Unfunded actuarial liability as of 7/1/85	<u>\$88,848,542</u>
2. Employer contribution requirement of normal cost plus interest on unfunded liability for period 7/1/85 to 6/30/86	9,601,093
3. Actual employer contribution for the year	<u>7,724,516</u>
4. Increase in unfunded liability due to employer contribution being less than normal cost plus interest on unfunded liability	1,876,577
5. Decrease in unfunded liability due to investment return greater than assumed	3,938,129
6. Decrease in unfunded liability due to salary increases less than assumed	1,849,000
7. Increase in unfunded liability due to other sources	<u>9,231,188</u>
8. Net increase in unfunded liability for the year (4+7-5-6)	<u>\$ 5,320,636</u>
9. Unfunded Actuarial Liability as of June 30, 1986 (1 + 8)	<u>\$94,169,178</u>

I. VALUE OF ACCUMULATED PLAN BENEFITS

Financial Accounting Standards Board Statement Number 35 (FASB No. 35) sets forth certain standards of financial accounting and reporting for the financial statements of defined benefit pension plans. Although the statement is applicable to state and local governments, the implementation date for state and local government pension plans has been extended indefinitely.

In Exhibit 7, we have presented the actuarial values required under FASB No. 35 as of June 30, 1986. As shown in Exhibit 7, the actuarial present value of accumulated vested plan benefits is \$231,805,944, and the actuarial present value of accumulated plan benefits is \$236,875,263.

The same actuarial assumptions were used in the calculation of these actuarial present values as were used in the regular actuarial valuation except that no salary increase assumption was used.

FASB No. 35 calls for a comparison of the actuarial present value of accumulated plan benefits with the net assets available for benefits, with investments valued at market value. On this basis, the net assets available for benefits amounts to \$245,132,459 and the ratio of the net assets available for benefits to the actuarial present value of accumulated plan benefits is 103.5%.

Exhibit 7Value of Accumulated Plan Benefits

Actuarial Present Value of Accumulated Plan Benefits

1. Vested Benefits		
(a) Participants Currently Receiving Benefits		\$132,453,822
(b) Other Vested Participants		<u>99,352,122</u>
(c) Total		<u>\$231,805,944</u>
2. Nonvested Benefits		<u>5,069,319</u>
3. Total Actuarial Present Value of Accumulated Plan Benefits		<u>\$236,875,263</u>

Net Assets Available For Benefits	\$245,132,459
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Ratio of Net Assets Available For Benefits To Actuarial Present Value of Accumulated Plan Benefits	103.5%
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J. Actuarial Present Value of Credited Projected Benefits

Section 22-503.1 of the Illinois Pension Code provides that for plan years ending on or after December 31, 1984, pension funds are required to disclose the actuarial present value of credited projected benefits as part of their actuarial statements. Credited projected benefits represent that portion of a participant's projected benefit based on an allocation taking into account service to date, determined in accordance with the terms of the plan, based on anticipated future compensation.

The actuarial present value of credited projected benefits would also be required to be disclosed as the standardized measure of the accrued pension benefit obligation under the Exposure Draft on disclosure of pension information for public employee retirement systems issued by the Governmental Accounting Standards Board on August 20, 1985.

We have therefore calculated the actuarial present value of credited projected benefits as part of the valuation. The results of the calculations are shown in Exhibit 8. It can be seen from Exhibit 8 that the total actuarial present value of credited projected benefits as of June 30, 1986 amounts to \$296,745,685.

Exhibit 8.Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits	\$132,453,822
2. For active members	
(a) Basic retirement annuity	\$112,262,666
(b) Annual increase in retirement annuity	22,387,257
(c) Pre-retirement survivor's annuity	8,005,463
(d) Post-retirement survivor's annuity	12,000,036
(e) Withdrawal benefits	7,766,896
(f) Pre-retirement death benefit	1,423,475
(g) Post-retirement death benefit	446,070
(h) Total for active members	\$164,291,863
3. Total actuarial present value of credited projected benefits	<u>\$296,745,685</u>

K. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the Park Employees' Annuity and Benefit Fund as of June 30, 1986.

Respectfully submitted

Sandor Goldstein
 Fellow of the Society of Actuaries
 Enrolled Actuary No. 3402

Appendix 1.Summary of Actuarial Assumptions and Actuarial Cost Method

Mortality Rates. The UP-1984 Mortality Table was used for the valuation.

Termination Rates. Termination rates based on the recent experience of the fund were used. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination Per 1,000 Members</u>
20	187
25	125
30	87
35	62
40	37
45	24
50	10
55 and later	0

Retirement Rates. Rates of retirement for each age from 55 to 70 based on the recent experience of the fund were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement Per 1,000 Members</u>
55	60
60	100
65	300
70	1,000

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Progression. - 5.5% per year, compounded annually.

Interest Rate. - 7.5% per year, compounded annually.

Marital Status. 75% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 2 years younger than that of the employee.

Actuarial Value of Assets. The book value of the assets of the Fund was used.

Actuarial Cost Method. The entry age actuarial cost method was used, with costs allocated on the basis of earnings.

Actuarial Assumptions Used In The Calculation Of Actuarial Present Value
Of Accumulated Plan Benefits. The actuarial assumptions that were used in the regular actuarial valuation were used in the calculation of the actuarial present value of accumulated plan benefits shown in Exhibit 7, except that no salary increase assumption was used and withdrawal rates were not used in determining the actuarial present value of vested benefits.

Appendix 2

Summary of Principal Provisions

1. Membership. Any person becoming an employee of the Chicago Park District is required to become a member of the Fund, as a condition of employment, after a waiting period of 6 consecutive months.

2. Employee Contributions. All members of the Fund are required to contribute to the Fund 8 1/2% of salary as follows:

- 6 1/2% for the retirement pension
- 1% for the spouse's pension
- 1% for the automatic increase in the retirement pension

In addition, employees are required to contribute \$3.60 per month toward the cost of the single sum death benefit.

3. Retirement Pension-Eligibility. An employee may retire at age 55 with at least 10 years of service or at age 60 with 4 years of service.

If retirement occurs before age 60, the retirement pension is reduced 1/2% for each month that the age of the member is below 60. However, there is no reduction if the employee has at least 35 years of service.

4. Retirement Pension-Amount. The retirement pension is based on the average of the 4 highest consecutive years of salary within the last 10 years, at the following rates:

- 1.7% for each of the first 10 years of service; plus
- 2.0% for each of the next 10 years of service; plus
- 2.4% for each of the next 10 years of service; plus
- 2.8% for each year of service over 30

An employee who was a participant before July 1, 1971 is entitled to the pension provided under the money purchase formula if it provides a greater pension than that provided under the above fixed benefit formula.

5. Post Retirement Increase In Retirement Pension. An employee retiring at age 60 or over is entitled to automatic annual increases of 3% of the originally granted pension following 1 year's receipt of pension payments. In the case of an employee who retires before age 60, the increase begins following the later of attainment of age 60 and receipt of 1 year's pension payments.

6. Surviving Spouse's Pension. A surviving spouse is entitled to a pension upon the death of an employee while in service or on retirement. If the surviving spouse is age 60 or over and the employee or pensioner had at least 20 years of service, the minimum surviving spouse's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the age of the surviving spouse is less than 60, the pension is reduced 1/2 of 1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension under the money purchase formula, taking into account employee and employer contributions toward

the surviving spouse's pension.

7. Children's Pension. Unmarried children under the age of 18 of a deceased employee are entitled to a children's pension. If either parent is living, the pension is \$100.00 per month. If no parent survives, the pension for each child is \$150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employee's final salary.

8. Single Sum Death Benefit. A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows:

- \$2,000 benefit during the 1st year of service,
- \$3,000 benefit during the 2nd year of service,
- \$4,000 benefit during the 3rd year of service,
- \$5,000 benefit during the 4th year of service,
- \$6,000 benefit during the 5th through 9th year of service,
- \$10,000 benefit if death occurs after 10 or more years of service

Upon the death of a retired member with 10 or more years of service, the \$10,000 maximum benefit is reduced to \$6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by \$1,500 for each year or fraction of a year while on retirement, but shall not be less than \$1,500.

9. Ordinary Disability Benefit. An ordinary disability benefit is payable after 8 consecutive days absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed 1/4 of the length of service, but not more than 5 years, or age 70, whichever occurs first.

10. Occupational Disability Benefit. Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability until the employee attains age 65, if disability is incurred before age 60. If disability occurs after age 60, the benefit is payable for 5 years or attainment of age 70, whichever occurs first.

11. Occupational Death Benefit. Upon the death of an employee resulting from an accident incurred in the performance of duty, the surviving spouse is entitled to an occupational death benefit of 50% of salary. Each unmarried child under the age of 18 is entitled to a benefit of \$100 per month. The combined payments to a family may not exceed 75% of the employee's final salary. The total payments are reduced by Workmen's Compensation benefits.

12. Refunds. An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55 and 60 with less than 10 years of service, and to an employee who withdraws after age 60 with less than 5 years of service.

An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.

Appendix 3

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Accrued Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Entry Age Actuarial Cost Method. A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided at a valuation date by the actuarial present value of future normal costs is called the actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.
10. Accrued Benefit or Accumulated Plan Benefit. The amount of an individual's benefit as of a specific date determined in accordance with the terms of a pension plan and based on compensation and service to that date.
11. Vested Benefits. Benefits that are not contingent on an employee's future service.

PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

ACTUARIAL VALUATION
AS OF JUNE 30, 1987



S. Goldstein and Associates
consulting actuaries

December 15, 1987

The Trustees of the Retirement
Board of the Park Employees'
Annuity and Benefit Fund of Chicago
200 South Michigan Avenue
Suite 410
Chicago, Illinois 60605

Genlemen:

Re: Actuarial Valuation As Of June 30, 1987

I am pleased to submit my actuarial report on the financial position and funding requirements of the Park Employees' Annuity and Benefit Fund of Chicago as of June 30, 1987.

The report consists of 11 sections and 3 appendices as follows:

	<u>Page No.</u>
Section A	1
Section B	1
Section C	2
Section D	2
Section E	2
Section F	3
Section G	4
Section H	5
Section I	6
Section J	7
Appendix 1	8
Appendix 2	9
Appendix 3	12

I would be pleased to discuss any aspects of this report with you at your convenience.

Respectfully submitted,


Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Park Employees' Annuity and Benefit Fund as of June 30, 1987. The purpose of the valuation was to determine the financial position and funding requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total actuarial liability	\$ 341,976,419
2. Actuarial value of assets	256,515,854
3. Unfunded actuarial liability	85,451,565
4. Funded Ratio	75.0%
5. Employer's annual funding requirement of normal cost plus interest on the unfunded liability	\$ 9,622,366
6. Estimated employer contribution for the year	8,617,694
7. Estimated deficiency in employer contribution	1,004,672
8. Tax multiple required for employer contribution to be sufficient to meet funding requirement	1.23
9. Actuarial present value of credited projected benefits	314,828,084

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the Fund. The membership of the Fund as of June 30, 1987 on which the valuation was based is summarized in Exhibit 1. It can be seen that there were 4,288 active members, 1657 pensioners, 984 surviving spouses, and 52 children in receipt of benefits included in the valuation. The total active payroll as of June 30, 1987 was \$96,735,554.

Exhibit 1

Summary of Membership Data

1. Number of Members.	
(a) Active Members	4,288
(b) Members Receiving	
(i) Retirement Pensions	1,657
(ii) Surviving Spouse's Pensions	984
(iii) Children's annuities	52
2. Annual Salaries	
(a) Total salary	\$ 96,735,554
(b) Average Salary	22,560
3. Annual Pension Payments	
(a) Retirement Pensions	\$ 12,994,468
(b) Surviving Spouse's Pensions	2,802,673
(c) Children's Annuities	62,400



Assets. The asset values used for the valuation were based on the asset information contained in the unaudited statement of assets as of June 30, 1987 prepared by the Fund. For purposes of the valuation, the book value of the assets of the Fund less the amount of current liabilities was used. The resulting actuarial value of assets was \$256,515,854. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

1. Cash and short term investments at cost	\$ 18,546,561
2. Receivables	4,375,415
3. Investment in bonds at amortized cost	163,326,646
4. Investments in equities at cost	46,650,993
5. Investments in real estate at cost	20,200,000
6. Accrued interest on investments	3,659,497
7. Total book value of assets	\$256,759,112
8. Current Liabilities	243,258
9. Actuarial Value of Assets (7.-8.)	<u>\$256,515,854</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the Fund in effect as of June 30, 1987 as provided in Article 12 of the Illinois Pension Code. A summary of the principal provisions of the Fund is provided in Appendix 2.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

The actuarial assumptions used for the current valuation are the same as those used for the valuation as of June 30, 1986. These actuarial assumptions are based on an experience analysis of the Fund for the three year period 1981 to 1984. The actuarial assumptions used for the current valuation are outlined in Appendix 1.

In our opinion, the actuarial assumptions used for the valuation are reasonable in the aggregate, taking into account Fund experience and future expectations, and represent our best estimate of anticipated experience.

The entry age actuarial cost method was used for the valuation. This is the same actuarial cost method that was used in previous valuations.

E. Actuarial Liability

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 3.)



As of June 30, 1987, the total actuarial liability is \$341,967,419, the actuarial value of assets is \$256,515,854, and the unfunded actuarial liability is \$85,451,565. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 75.0%.

Exhibit 3.

Actuarial Liability

1. Actuarial Liability For Members in Receipt of Benefits

(a) Money purchase component of annuities to retirees	\$ 64,773,198
(b) Fixed benefit component of annuities to retirees	18,924,675
(c) Annual increases in retirement annuity	23,445,841
(d) Annual increases to employee annuitants	872,721
(e) Survivor annuities to survivors of current retirees	10,818,246
(f) Lump sum death benefits	1,334,083
(g) Survivor annuities to current survivors	22,796,188
(h) Total	<u>\$142,964,952</u>

2. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$138,609,156
(b) Annual increase in retirement annuity	25,695,302
(c) Pre-retirement survivor's annuity	9,313,654
(d) Post-retirement survivor's annuity	15,366,195
(e) Withdrawal benefits	8,638,819
(f) Pre-retirement death benefit	936,573
(g) Post-retirement death benefit	442,768
(h) Total	<u>\$199,002,467</u>

3. Total Actuarial Liability	<u>\$341,967,419</u>
4. Net Present Assets	<u>\$256,515,854</u>
5. Unfunded Actuarial Liability	<u>\$ 85,451,565</u>
6. Funded Ratio	75.0%

F. Employer's Normal Cost

The employer's share of the normal cost for the year beginning July 1, 1987 is developed in Exhibit 4. For the year beginning July 1, 1987, the total normal cost is determined to be \$11,791,705, employee contributions are estimated to be \$8,350,600, resulting in the employer's share of the normal cost of \$3,441,105.

Based on a payroll of \$96,735,554, the employer's share of the normal cost can be expressed as 3.56% of payroll.



Exhibit 4Employer's Normal Cost For Year Beginning July 1, 1987

1. Basic retirement annuity	\$ 5,902,836
2. Annual increase in retirement annuity	1,099,842
3. Pre-retirement survivor's annuity	618,456
4. Post-retirement survivor's annuity	637,926
5. Withdrawal benefits, including refunds	1,774,602
6. Pre-retirement death benefit	151,193
7. Post-retirement death benefit	30,802
8. Children's annuity	62,400
9. Ordinary disability benefit	946,469
10. Duty disability benefit	88,379
11. Administrative expenses	478,800
12. Total normal cost	<u>\$11,791,705</u>
13. Employee contributions	<u>8,350,600</u>
14. Employer's share of normal cost	<u>\$ 3,441,105</u>
15. Total payroll	\$96,735,554
16. Employer's share of normal cost as a percent of payroll	3.56%

G. Employer's Funding Requirement

The employer's funding requirement of normal cost plus interest on the unfunded liability for the year beginning July 1, 1987 is developed in Exhibit 5.

An employer contribution of normal cost plus interest on the unfunded liability is generally considered to be the minimum contribution level for public retirement systems. By paying the normal cost each year, the accruing cost of pensions is met as service is rendered by employees. By paying interest on the unfunded actuarial liability, the unfunded actuarial liability is stabilized. Although no attempt is made to pay off the unfunded actuarial liability, this approach is nevertheless considered acceptable for public retirement systems where permanence can be taken for granted and full funding is not regarded as essential.

It can be seen from Exhibit 5 that for the year beginning July 1, 1987, the employer funding requirement of normal cost plus interest on the unfunded actuarial liability amounts to \$9,622,366. Actual employer contributions for the year are estimated to amount to \$8,617,694. Thus, employer contributions for the year are expected to fall short of the employer funding requirement by \$1,004,672. This deficiency in employer contributions can be expressed as 1.04% of payroll.

Employer contributions to the Fund come from a tax levied upon all taxable property in the city of Chicago. The amount of tax presently levied is 1.10 times the amount of employee contributions made 2 years previously. The 1.10 is known as the tax multiple. We have estimated that in order to provide



sufficient employer contributions to meet the funding requirement of normal cost plus interest on the unfunded actuarial liability, a tax multiple of 1.23 would be needed.

Exhibit 5

Funding Requirement For Year Beginning July 1, 1987

1. Employer's share of normal cost	\$ 3,441,105
2. Interest on the unfunded actuarial liability	<u>6,181,261</u>
3. Employer's funding requirement of normal cost plus interest on the unfunded actuarial liability	\$ 9,622,366
4. Estimated employer contribution for the year	<u>8,617,694</u>
5. Estimate of amount by which employer contributions are expected to fall short of the funding requirement of normal cost plus interest on the unfunded liability	\$ 1,004,672

H. RECONCILIATION OF CHANGE IN UNFUNDED ACTUARIAL LIABILITY

The net actuarial experience during the period July 1, 1986 to June 30, 1987 resulted in a decrease in the Fund's unfunded actuarial liability of \$8,717,613. This decrease in unfunded actuarial liability is a result of several kinds of gains and losses. The financial effect of the most significant gains and losses is illustrated in Exhibit 6.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$9,953,274, whereas the actual employer contribution for the year amounted to \$8,558,322. Thus, the employer contribution for the year fell \$1,394,952 short of meeting normal cost plus interest on the unfunded liability. Had all other aspects of the Fund's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The value of assets increased at a rate of approximately 9.7% during the year in comparison to the assumed rate of 7.5%. This resulted in a decrease in the unfunded liability of \$4,344,457. Salaries increased at an average rate of 4.6% per year in comparison with an assumed rate of 5.5%, resulting in a decrease in the unfunded liability of \$1,772,414.

The various other aspects of the Fund's experience resulted in a net decrease in the unfunded actuarial liability of \$3,995,694.

The aggregate financial experience of the Fund resulted in a decrease in the unfunded actuarial liability of \$8,717,613.



Exhibit 6

Reconciliation of Change in Unfunded Actuarial Liability
Over the Period July 1, 1986 to June 30, 1987

1. Unfunded actuarial liability as of 7/1/86	<u>\$94,169,178</u>
2. Employer contribution requirement of normal cost plus interest on unfunded liability for period 7/1/86 to 6/30/87	9,953,274
3. Actual employer contribution for the year	<u>8,558,322</u>
4. Increase in unfunded liability due to employer contribution being less than normal cost plus interest on unfunded liability	1,394,952
5. Decrease in unfunded liability due to investment return greater than assumed	4,344,457
6. Decrease in unfunded liability due to salary increases less than assumed	1,772,414
7. Decrease in unfunded liability due to other sources	<u>3,995,694</u>
8. Net decrease in unfunded liability for the year (5+6+7-4)	<u>\$ 8,717,613</u>
9. Unfunded Actuarial Liability as of June 30, 1987 (1 - 8)	<u>\$85,451,565</u>

I. Actuarial Present Value of Credited Projected Benefits

In November 1986, the Governmental Accounting Standards Board (GASB) issued Statement No. 5 entitled Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Governmental Employers. The statement establishes standards of disclosure of pension information by public employee retirement systems.

GASB Statement No. 5 requires the disclosure of the actuarial present value of credited projected benefits as the standardized measure of the accrued pension obligation. This measure represents the discounted value of the amount of benefits estimated payable in the future as a result of employee service to date, computed by attributing an equal benefit amount to each year of service of the employee.

Section 22-503.1 of the Illinois Pension Code also requires Illinois public pension funds to disclose the actuarial present value of credited projected benefits as part of their actuarial reports.

We have therefore calculated the actuarial present value of credited projected



benefits as part of the actuarial valuation. The results of our calculations are shown in Exhibit 7. It can be seen from Exhibit 7 that the actuarial present value of projected benefits as of August 31, 1987 amounts to \$314,828,084, and the unfunded actuarial present value of credited projected benefits amounts to \$58,312,230.

Exhibit 7.

Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits	\$142,964,952
2. For active members	
(a) Basic retirement annuity	\$114,654,277
(b) Annual increase in retirement annuity	21,290,410
(c) Pre-retirement survivor's annuity	8,921,995
(d) Post-retirement survivor's annuity	12,626,275
(e) Withdrawal benefits	12,578,486
(f) Pre-retirement death benefit	1,370,997
(g) Post-retirement death benefit	420,692
(h) Total for active members	\$171,863,132
3. Total actuarial present value of credited projected benefits	\$314,828,084
4. Net assets available for benefits, at cost (Market value is \$267,535,982)	<u>\$256,515,854</u>
5. Unfunded actuarial present value of credited projected benefits	<u>\$ 58,312,230</u>

J. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the Park Employees' Annuity and Benefit Fund as of June 30, 1987.

Respectfully submitted



Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402



Appendix 1.

Summary of Actuarial Assumptions and Actuarial Cost Method

Mortality Rates. The UP-1984 Mortality Table was used for the valuation.

Termination Rates. Termination rates based on the recent experience of the fund were used. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination Per 1,000 Members</u>
20	187
25	125
30	87
35	62
40	37
45	24
50	10
55 and later	0

Retirement Rates. Rates of retirement for each age from 55 to 70 based on the recent experience of the fund were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement Per 1,000 Members</u>
55	60
60	100
65	300
70	1,000

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Progression. - 5.5% per year, compounded annually.

Interest Rate. - 7.5% per year, compounded annually.

Marital Status. 75% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 2 years younger than that of the employee.

Actuarial Value of Assets. The book value of the assets of the Fund was used.

Actuarial Cost Method. The entry age actuarial cost method was used, with costs allocated on the basis of earnings.



Appendix 2

Summary of Principal Provisions

1. Membership. Any person becoming an employee of the Chicago Park District is required to become a member of the Fund, as a condition of employment, after a waiting period of 6 consecutive months.

2. Employee Contributions. All members of the Fund are required to contribute to the Fund 8 1/2% of salary as follows:

- 6 1/2% for the retirement pension
- 1% for the spouse's pension
- 1% for the automatic increase in the retirement pension

In addition, employees are required to contribute \$3.60 per month toward the cost of the single sum death benefit.

3. Retirement Pension-Eligibility. An employee may retire at age 55 with at least 10 years of service or at age 60 with 4 years of service.

If retirement occurs before age 60, the retirement pension is reduced 1/2% for each month that the age of the member is below 60. However, there is no reduction if the employee has at least 35 years of service.

4. Retirement Pension-Amount. The retirement pension is based on the average of the 4 highest consecutive years of salary within the last 10 years, at the following rates:

- 1.7% for each of the first 10 years of service; plus
- 2.0% for each of the next 10 years of service; plus
- 2.4% for each of the next 10 years of service; plus
- 2.8% for each year of service over 30

An employee who was a participant before July 1, 1971 is entitled to the pension provided under the money purchase formula if it provides a greater pension than that provided under the above fixed benefit formula.

5. Post Retirement Increase In Retirement Pension. An employee retiring at age 60 or over is entitled to automatic annual increases of 3% of the originally granted pension following 1 year's receipt of pension payments. In the case of an employee who retires before age 60, the increase begins following the later of attainment of age 60 and receipt of 1 year's pension payments.

6. Surviving Spouse's Pension. A surviving spouse is entitled to a pension upon the death of an employee while in service or on retirement. If the surviving spouse is age 60 or over and the employee or pensioner had at least 20 years of service, the minimum surviving spouse's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If the age of the surviving spouse is less than 60, the pension is reduced 1/2 of 1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension



under the money purchase formula, taking into account employee and employer contributions toward the surviving spouse's pension.

7. Children's Pension. Unmarried children under the age of 18 of a deceased employee are entitled to a children's pension. If either parent is living, the pension is \$100.00 per month. If no parent survives, the pension for each child is \$150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employee's final salary.

8. Single Sum Death Benefit. A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows:

- \$2,000 benefit during the 1st year of service,
- \$3,000 benefit during the 2nd year of service,
- \$4,000 benefit during the 3rd year of service,
- \$5,000 benefit during the 4th year of service,
- \$6,000 benefit during the 5th through 9th year of service,
- \$10,000 benefit if death occurs after 10 or more years of service

Upon the death of a retired member with 10 or more years of service, the \$10,000 maximum benefit is reduced to \$6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by \$1,500 for each year or fraction of a year while on retirement, but shall not be less than \$1,500.

9. Ordinary Disability Benefit. An ordinary disability benefit is payable after 8 consecutive days absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed 1/4 of the length of service, but not more than 5 years, or age 70, whichever occurs first.

10. Occupational Disability Benefit. Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability until the employee attains age 65, if disability is incurred before age 60. If disability occurs after age 60, the benefit is payable for 5 years or attainment of age 70, whichever occurs first.

11. Occupational Death Benefit. Upon the death of an employee resulting from an accident incurred in the performance of duty, the surviving spouse is entitled to an occupational death benefit of 50% of salary. Each unmarried child under the age of 18 is entitled to a benefit of \$100 per month. The combined payments to a family may not exceed 75% of the employee's final salary. The total payments are reduced by Workmen's Compensation benefits.

12. Refunds. An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55 and 60 with less than 10 years of service, and to an employee who withdraws after age 60 with less than 5 years of service.

An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.

Appendix 3

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Accrued Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Entry Age Actuarial Cost Method. A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided at a valuation date by the actuarial present value of future normal costs is called the actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.
10. Accrued Benefit or Accumulated Plan Benefit. The amount of an individual's benefit as of a specific date determined in accordance with the terms of a pension plan and based on compensation and service to that date.
11. Vested Benefits. Benefits that are not contingent on an employee's future service.





PARK EMPLOYEES' ANNUITY AND BENEFIT FUND OF CHICAGO

ACTUARIAL VALUATION
AS OF JUNE 30, 1988



November 4, 1988

The Trustees of the Retirement
Board of the Park Employees'
Annuity and Benefit Fund of Chicago
200 South Michigan Avenue
Suite 410
Chicago, Illinois 60605

Re: Actuarial Valuation As Of June 30, 1988

Gentlemen:

I am pleased to submit my actuarial report on the financial position and funding requirements of the Park Employees' Annuity and Benefit Fund of Chicago as of June 30, 1988.

The report consists of 11 sections and 3 appendices as follows:

	<u>Page No.</u>
Section A	1
Section B	1
Section C	2
Section D	2
Section E	2
Section F	3
Section G	4
Section H	5
Section I	6
Section J	7
Appendix 1	8
Appendix 2	9
Appendix 3	12

I would be pleased to discuss any aspects of this report with you at your convenience.

Respectfully submitted,

Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Park Employees' Annuity and Benefit Fund as of June 30, 1988. The purpose of the valuation was to determine the financial position and funding requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total actuarial liability	\$ 338,809,745
2. Actuarial value of assets	276,066,836
3. Unfunded actuarial liability	62,742,909
4. Funded Ratio	81.5%
5. Employer's annual funding requirement of normal cost plus interest on the unfunded liability	\$ 8,138,255
6. Estimated employer contribution for the year	8,094,045
7. Actuarial present value of credited projected benefits	312,660,278

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the Fund. The membership of the Fund as of June 30, 1988 on which the valuation was based is summarized in Exhibit 1. It can be seen that there were 4,346 active members, 1705 pensioners, 979 surviving spouses, and 49 children in receipt of benefits included in the valuation. The total active payroll as of June 30, 1988 was \$97,637,549.

Exhibit 1

Summary of Membership Data

1. Number of Members.	
(a) Active Members	4,346
(b) Members Receiving	
(i) Retirement Pensions	1,705
(ii) Surviving Spouse's Pensions	979
(iii) Children's annuities	49
2. Annual Salaries	
(a) Total salary	\$ 97,637,549
(b) Average Salary	22,466
3. Annual Pension Payments	
(a) Retirement Pensions	\$ 14,475,442
(b) Surviving Spouse's Pensions	2,963,470
(c) Children's Annuities	53,760

Assets. The asset values used for the valuation were based on the asset information contained in the unaudited statement of assets as of June 30, 1988 prepared by the Fund. For purposes of the valuation, the book value of the assets of the Fund less the amount of current liabilities was used. The resulting actuarial value of assets was \$276,066,836. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

1. Cash and short term investments at cost	\$ 21,144,362
2. Receivables	4,636,761
3. Investment in bonds at amortized cost	169,234,874
4. Investments in equities at cost	55,555,083
5. Investments in real estate at cost	21,903,036
6. Accrued interest on investments	3,907,589
7. Prepaid expenses	5,261
8. Total book value of assets	<u>\$276,386,966</u>
9. Current Liabilities	320,130
10. Actuarial Value of Assets (8.-9.)	<u>\$276,066,836</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the Fund in effect as of June 30, 1988 as provided in Article 12 of the Illinois Pension Code. A summary of the principal provisions of the Fund is provided in Appendix 2.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

On the basis of an experience analysis of the fund over the three year period 1985 through 1987, certain changes in actuarial assumptions were made for the June 30, 1988 actuarial valuation from the assumptions used for the June 30, 1987 valuation. The changes in assumptions were as follows: (1) The mortality assumption was changed from the UP-1984 Mortality Table to the UP-1984 Mortality Table, rated up one year, and (2) Rates of retirement were increased. (The actuarial assumptions used for the current valuation are outlined in Appendix 1.)

In our opinion, the actuarial assumptions used for the valuation are reasonable in the aggregate, taking into account fund experience and future expectations, and represent our best estimate of anticipated experience.

The entry age actuarial cost method was used for the valuation. This is the same actuarial cost method that was used in previous valuations.

E. Actuarial Liability

The actuarial liability as determined under the valuation for the various

classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 3.)

As of June 30, 1988, the total actuarial liability is \$338,809,745, the actuarial value of assets is \$276,066,836 and the unfunded actuarial liability is \$62,742,909. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 81.5%.

Exhibit 3.

Actuarial Liability

1. Actuarial Liability For Members in Receipt of Benefits

(a) Money purchase component of annuities to retirees	\$ 71,977,699
(b) Fixed benefit component of annuities to retirees	20,071,332
(c) Annual increases in retirement annuity	23,908,910
(d) Annual increases to employee annuitants	761,688
(e) Survivor annuities to survivors of current retirees	11,952,026
(f) Lump sum death benefits	1,408,792
(g) Survivor annuities to current survivors	23,080,374
(h) Total	\$153,160,821

2. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$127,825,567
(b) Annual increase in retirement annuity	23,111,946
(c) Pre-retirement survivor's annuity	8,894,437
(d) Post-retirement survivor's annuity	14,160,258
(e) Withdrawal benefits	9,218,008
(f) Pre-retirement death benefit	959,851
(g) Post-retirement death benefit	459,242
(h) Total	\$184,629,309

3. Actuarial Liability For Inactive Members 1,019,615

4. Total Actuarial Liability \$338,809,745

4. Net Present Assets \$276,066,836

5. Unfunded Actuarial Liability \$ 62,742,909

6. Funded Ratio 81.5%

F. Employer's Normal Cost

The employer's share of the normal cost for the year beginning July 1, 1988 is developed in Exhibit 4. For the year beginning July 1, 1988, the total normal

cost is determined to be \$12,006,801, employee contributions are estimated to be \$8,407,143, resulting in the employer's share of the normal cost of \$3,599,658.

Based on a payroll of \$97,637,549, the employer's share of the normal cost can be expressed as 3.69% of payroll.

Exhibit 4

Employer's Normal Cost For Year Beginning July 1, 1988

1. Basic retirement annuity	\$ 5,955,748
2. Annual increase in retirement annuity	1,081,353
3. Pre-retirement survivor's annuity	628,832
4. Post-retirement survivor's annuity	643,643
5. Withdrawal benefits, including refunds	1,753,279
6. Pre-retirement death benefit	157,735
7. Post-retirement death benefit	33,934
8. Children's annuity	53,760
9. Ordinary disability benefit	1,024,909
10. Duty disability benefit	87,025
11. Administrative expenses	586,583
12. Total normal cost	<u>\$12,006,801</u>
13. Employee contributions	<u>8,407,143</u>
14. Employer's share of normal cost	<u>\$ 3,599.658</u>
15. Total payroll	\$97,637,549
16. Employer's share of normal cost as a percent of payroll	3.69%

G. Employer's Funding Requirement

The employer's funding requirement of normal cost plus interest on the unfunded liability for the year beginning July 1, 1988 is developed in Exhibit 5.

An employer contribution of normal cost plus interest on the unfunded liability is generally considered to be the minimum contribution level for public retirement systems. By paying the normal cost each year, the accruing cost of pensions is met as service is rendered by employees. By paying interest on the unfunded actuarial liability, the unfunded actuarial liability is stabilized. Although no attempt is made to pay off the unfunded actuarial liability, this approach is nevertheless considered acceptable for public retirement systems where permanence can be taken for granted and full funding is not regarded as essential.

It can be seen from Exhibit 5 that for the year beginning July 1, 1988, the employer funding requirement of normal cost plus interest on the unfunded actuarial liability amounts to \$8,138,255.

Employer contributions to the Fund come from a tax levied upon all taxable property in the city of Chicago. The amount of tax presently levied is 1.10 times the amount of employee contributions made 2 years previously. The 1.10 is known as the tax multiple. Based on the 1.10 tax multiple, we have estimated employer contributions for the year beginning July 1, 1988 to be \$8,094,045. Thus, employer contributions for the year are expected to fall short of the employer funding requirement by \$44,210.

Exhibit 5

Funding Requirement For Year Beginning July 1, 1988

1. Employer's share of normal cost	\$ 3,599,658
2. Interest on the unfunded actuarial liability	<u>4,705,718</u>
3. Employer's funding requirement of normal cost plus interest on the unfunded actuarial liability	\$ 8,138,255
4. Estimated employer contribution for the year	<u>8,094,045</u>
5. Estimate of amount by which employer contributions are expected to fall short of the funding requirement of normal cost plus interest on the unfunded liability	\$ <u>44,210</u>

H. RECONCILIATION OF CHANGE IN UNFUNDED ACTUARIAL LIABILITY

The net actuarial experience during the period July 1, 1987 to June 30, 1988 resulted in a decrease in the Fund's unfunded actuarial liability of \$22,708,656. This decrease in unfunded actuarial liability is a result of several kinds of gains and losses. The financial effect of the most significant gains and losses is illustrated in Exhibit 6.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$9,622,366, whereas the actual employer contribution for the year amounted to \$8,123,234. Thus, the employer contribution for the year fell \$1,499,132 short of meeting normal cost plus interest on the unfunded liability. Had all other aspects of the fund's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The value of assets increased at a rate of approximately 9.2% during the year in comparison to the assumed rate of 7.5%. This resulted in a decrease in the unfunded liability of \$3,541,402. Salaries increased at an average rate of 1.0% per year in comparison with an assumed rate of 5.5%, resulting in a decrease in the unfunded liability of \$8,955,000.

Changes in actuarial assumptions resulted in a decrease in the unfunded liability of \$6,170,742. The various other aspects of the Fund's experience resulted in a net decrease in the unfunded actuarial liability of \$5,540,644.

The aggregate financial experience of the Fund resulted in a decrease in the unfunded actuarial liability of \$22,708,656.

Exhibit 6

Reconciliation of Change in Unfunded Actuarial Liability
Over the Period July 1, 1987 to June 30, 1988

1. Unfunded actuarial liability as of 7/1/87	<u>\$85,451,565</u>
2. Employer contribution requirement of normal cost plus interest on unfunded liability for period 7/1/87 to 6/30/88	9,622,366
3. Actual employer contribution for the year	<u>8,123,234</u>
4. Increase in unfunded liability due to employer contribution being less than normal cost plus interest on unfunded liability	1,499,132
5. Decrease in unfunded liability due to investment return greater than assumed	3,541,402
6. Decrease in unfunded liability due to salary increases less than assumed	8,955,000
7. Decrease in unfunded liability due to changes in actuarial assumptions	6,170,742
8. Decrease in unfunded liability due to other sources	<u>5,540,644</u>
9. Net decrease in unfunded liability for the year (5+6+7+8-4)	<u>\$22,708,656</u>
10. Unfunded Actuarial Liability as of June 30, 1988 (1 - 9)	<u>\$62,742,909</u>

I. Actuarial Present Value of Credited Projected Benefits

In November 1986, the Governmental Accounting Standards Board (GASB) issued Statement No. 5 entitled Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Governmental Employers. The statement establishes standards of disclosure of pension information by public employee retirement systems.

GASB Statement No. 5 requires the disclosure of the actuarial present value of credited projected benefits as the standardized measure of the accrued pension obligation. This measure represents the discounted value of the amount of benefits estimated payable in the future as a result of employee service to

date, computed by attributing an equal benefit amount to each year of service of the employee.

We have therefore calculated the actuarial present value of credited projected benefits as part of the actuarial valuation. The results of our calculations are shown in Exhibit 7. It can be seen from Exhibit 7 that the actuarial present value of projected benefits as of June 30, 1988 amounts to \$312,660,278, and the unfunded actuarial present value of credited projected benefits amounts to \$36,593,442.

Exhibit 7.

Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits and for inactive members	\$154,180,436
2. For current employees	
Accumulated employee contributions	89,404,467
Employer-financed vested	21,307,513
Employer-financed nonvested	<u>47,767,862</u>
3. Total actuarial present value of credited projected benefits	\$312,660,278
4. Net assets available for benefits, at cost (Market value is \$277,890,111)	<u>\$276,066,836</u>
5. Unfunded actuarial present value of credited projected benefits	<u>\$ 36,593,442</u>

J. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of my knowledge, fairly represents the financial condition of the Park Employees' Annuity and Benefit Fund as of June 30, 1988.

Respectfully submitted



Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

Appendix 1.

Summary of Actuarial Assumptions and Actuarial Cost Method

Mortality Rates. The UP-1984 Mortality Table, rated up 1 year, was used for the valuation.

Termination Rates. Termination rates based on the recent experience of the fund were used. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination Per 1,000 Members</u>
20	187
25	125
30	87
35	62
40	37
45	24
50	10
55 and later	0

Retirement Rates. Rates of retirement for each age from 55 to 70 based on the recent experience of the fund were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement Per 1,000 Members</u>
55	100
60	150
65	300
70	1,000

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Progression. - 5.5% per year, compounded annually.

Interest Rate. - 7.5% per year, compounded annually.

Marital Status. 75% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 2 years younger than that of the employee.

Actuarial Value of Assets. The book value of the assets of the Fund was used.

Actuarial Cost Method. The entry age actuarial cost method was used, with costs allocated on the basis of earnings.

Appendix 2

Summary of Principal Provisions

1. Membership. Any person becoming an employee of the Chicago Park District is required to become a member of the Fund, as a condition of employment, after a waiting period of 6 consecutive months.

2. Employee Contributions. All members of the Fund are required to contribute to the Fund 8 1/2% of salary as follows:

- 6 1/2% for the retirement pension
- 1% for the spouse's pension
- 1% for the automatic increase in the retirement pension

In addition, employees are required to contribute \$3.60 per month toward the cost of the single sum death benefit.

3. Retirement Pension-Eligibility. An employee may retire at age 55 with at least 10 years of service or at age 60 with 4 years of service.

If retirement occurs before age 60, the retirement pension is reduced 1/2% for each month that the age of the member is below 60. However, there is no reduction if the employee has at least 35 years of service.

4. Retirement Pension-Amount. The retirement pension is based on the average of the 4 highest consecutive years of salary within the last 10 years, at the following rates:

- 1.7% for each of the first 10 years of service; plus
- 2.0% for each of the next 10 years of service; plus
- 2.4% for each of the next 10 years of service; plus
- 2.8% for each year of service over 30

An employee who was a participant before July 1, 1971 is entitled to the pension provided under the money purchase formula if it provides a greater pension than that provided under the above fixed benefit formula.

5. Post Retirement Increase In Retirement Pension. An employee retiring at age 60 or over is entitled to automatic annual increases of 3% of the originally granted pension following 1 year's receipt of pension payments. In the case of an employee who retires before age 60, the increase begins following the later of attainment of age 60 and receipt of 1 year's pension payments.

6. Surviving Spouse's Pension. A surviving spouse is entitled to a pension upon the death of an employee while in service or on retirement. If the surviving spouse is age 60 or over and the employee or pensioner had at least 20 years of service, the minimum surviving spouse's pension is 50% of the deceased employee's or retired employee's pension at the date of death. If

the age of the surviving spouse is less than 60, the pension is reduced 1/2 of 1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension under the money purchase formula, taking into account employee and employer contributions toward the surviving spouse's pension.

7. Children's Pension. Unmarried children under the age of 18 of a deceased employee are entitled to a children's pension. If either parent is living, the pension is \$100.00 per month. If no parent survives, the pension for each child is \$150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employee's final salary.

8. Single Sum Death Benefit. A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows:

- \$2,000 benefit during the 1st year of service,
- \$3,000 benefit during the 2nd year of service,
- \$4,000 benefit during the 3rd year of service,
- \$5,000 benefit during the 4th year of service,
- \$6,000 benefit during the 5th through 9th year of service,
- \$10,000 benefit if death occurs after 10 or more years of service

Upon the death of a retired member with 10 or more years of service, the \$10,000 maximum benefit is reduced to \$6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by \$1,500 for each year or fraction of a year while on retirement, but shall not be less than \$1,500.

9. Ordinary Disability Benefit. An ordinary disability benefit is payable after 8 consecutive days absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed 1/4 of the length of service, but not more than 5 years, or age 70, whichever occurs first.

10. Occupational Disability Benefit. Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability until the employee attains age 65, if disability is incurred before age 60. If disability occurs after age 60, the benefit is payable for 5 years or attainment of age 70, whichever occurs first.

11. Occupational Death Benefit. Upon the death of an employee resulting from an accident incurred in the performance of duty, the surviving spouse is entitled to an occupational death benefit of 50% of salary. Each unmarried child under the age of 18 is entitled to a benefit of \$100 per month. The combined payments to a family may not exceed 75% of the employee's final salary. The total payments are reduced by Workmen's Compensation benefits.

12. Refunds. An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is

payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55 and 60 with less than 10 years of service, and to an employee who withdraws after age 60 with less than 5 years of service.

An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.

Appendix 3

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Accrued Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Entry Age Actuarial Cost Method. A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided at a valuation date by the actuarial present value of future normal costs is called the actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.
10. Accrued Benefit or Accumulated Plan Benefit. The amount of an individual's benefit as of a specific date determined in accordance with the terms of a pension plan and based on compensation and service to that date.
11. Vested Benefits. Benefits that are not contingent on an employee's future service.



S. Goldstein and Associates
consulting actuaries

**PARK EMPLOYEES' ANNUITY
AND BENEFIT FUND OF CHICAGO**

**ACTUARIAL VALUATION
AS OF JUNE 30, 1989**



November 15, 1989

The Trustees of the Retirement
Board of the Park Employees'
Annuity and Benefit Fund of Chicago
200 South Michigan Avenue
Suite 410
Chicago, Illinois 60605

Re: Actuarial Valuation as of June 30, 1989

Gentlemen:

I am pleased to submit my actuarial report on the financial position and funding requirements of the Park Employees' Annuity and Benefit Fund of Chicago as of June 30, 1989.

The report consists of 10 sections and 3 appendices as follows:

	<u>Page No.</u>
Section A	1
Section B	1
Section C	2
Section D	2
Section E	3
Section F	4
Section G	4
Section H	5
Section I	7
Section J	8
Appendix 1	9
Appendix 2	11
Appendix 3	14

I would be pleased to discuss any aspects of this report with you at your convenience.

Respectfully submitted.

Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the Park Employees' Annuity and Benefit Fund as of June 30, 1989. The purpose of the valuation was to determine the financial position and funding requirements of the pension fund. This report is intended to present the results of the valuation. The results of the valuation are summarized below:

1. Total actuarial liability	\$ 354,522,898
2. Actuarial value of assets	298,271,314
3. Unfunded actuarial liability	56,251,584
4. Funded Ratio	84.1%
5. Employer's annual funding requirement of normal cost plus interest on the unfunded liability	\$ 7,795,074
6. Estimated employer contributions for the year	8,256,785
7. Actuarial present value of credited projected benefits	\$ 327,273,638

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the Fund. The membership of the Fund as of June 30, 1989 on which the valuation was based is summarized in Exhibit 1. It can be seen that there were 4,260 active members, 1733 pensioners, 953 surviving spouses, and 34 children receiving benefits included in the valuation. The total active payroll as of June 30, 1989 was \$101,444,720.

Exhibit 1

Summary of Membership Data

1. Number of Members		
(a) Active Members		4,260
(b) Members Receiving		
(i) Retirement Pensions		1,733
(ii) Surviving Spouse's Pensions		953
(iii) Children's Annuities		34
2. Annual Salaries		
(a) Total Salary	\$	101,444,720
(b) Average Salary		23,813
3. Annual Pension Payments		
(a) Retirement Pensions	\$	15,564,494
(b) Surviving Spouse's Pensions		3,065,618
(c) Children's Annuities		48,960

Assets. The asset values used for the valuation were based on the asset information contained in the unaudited statement of assets as of June 30, 1989 prepared by the Fund. For purposes of the valuation, the book value of the assets of the Fund less the amount of current liabilities was used. The resulting actuarial value of assets was \$298,271,314. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

1. Cash and short term investments at cost	\$ 41,907,407
2. Receivables	5,327,278
3. Investment in bonds at amortized cost	170,258,578
4. Investments in equities at cost	50,869,809
5. Investments in real estate at cost	26,214,329
6. Accrued interest on investments	3,980,929
7. Prepaid expenses	5,795
8. Total book value of assets	\$ 298,564,125
9. Current Liabilities	292,811
10. Actuarial Value of Assets (8.-9.)	<u>\$ 298,271,314</u>

C. FUND PROVISIONS

Our valuation was based on the provisions of the Fund in effect as of June 30, 1989 as provided in Article 12 of the Illinois Pension Code. A summary of the principal provisions of the Fund is provided in Appendix 2.

House Bill 332 which was signed into law on August 23, 1989 as Public Act 86-0272 made a number of significant changes in the benefits provided under the system. These benefit changes were not taken into account in the regular June 30, 1989 actuarial valuation, as they were enacted after June 30, 1989.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

The same actuarial assumptions were used for the June 30, 1989 as were used for the June 30, 1988 valuation. These actuarial assumptions are based on an experience analysis of the Fund over the three year period 1985 through 1987. The actuarial assumptions used for the current valuation are outlined in Appendix 1.

In my opinion, the actuarial assumptions used for the valuation are reasonable in the aggregate, taking into account fund experience and future expectations, and represent my best estimate of anticipated experience.

The entry age actuarial cost method was used for the valuation. This is the same actuarial cost method that has been used in previous valuations.

E. ACTUARIAL LIABILITY

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 3.)

As of June 30, 1989, the total actuarial liability is \$354,522,898, the actuarial value of assets is \$298,271,314 and the unfunded actuarial liability is \$56,251,584. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 84.1%

Exhibit 3

Actuarial Liability

1. Actuarial Liability For Members in Receipt of Benefits

(a) Money purchase component of annuities to retirees	\$ 77,792,477
(b) Fixed benefit component of annuities to retirees	20,641,643
(c) Annual increases in retirement annuity	25,344,081
(d) Annual increases to employee annuitants	718,450
(e) Survivor annuities to survivors of current retirees	12,830,033
(f) Lump sum death benefits	1,471,624
(g) Survivor annuities to current survivors	23,595,082
(h) Total	\$ 162,393,390

2. Actuarial Liability For Active Members

(a) Basic retirement annuity	\$ 132,120,149
(b) Annual increase in retirement annuity	23,852,289
(c) Pre-retirement survivor's annuity	9,209,393
(d) Post-retirement survivor's annuity	14,644,338
(e) Withdrawal benefits	9,650,217
(f) Pre-retirement death benefit	944,833
(g) Post retirement death benefit	459,852
(h) Total	\$ 190,881,071

3. Actuarial Liability For Inactive Members 1,248,437

4. Total Actuarial Liability \$ 354,522,898

5. Net Present Assets \$ 298,271,314

6. Unfunded Ratio \$ 56,251,584

7. Funded Ratio 84.1%



Impact of Benefit Changes Enacted Under Public Act 86-0272. As indicated in Section C. of this report, the benefit increases enacted under Public Act 86-0272 were not taken into account in determining the actuarial liability as of June 30, 1989. I have estimated that if these benefit increases had been taken into account, they would have had the impact of increasing the total actuarial liability by \$17,790,020 to \$372,312,918.

F. EMPLOYER'S NORMAL COST

The employer's share of the normal cost for the year beginning July 1, 1989 is developed in Exhibit 4. For the year beginning July 1, 1989, the total normal cost is determined to be \$12,420,187, employee contributions are estimated to be \$8,694,151, resulting in the employer's share of the normal cost of \$3,726,036.

Based on a payroll of \$101,444,720, the employer's share of the normal cost can be expressed as 3.67% of payroll.

Exhibit 4

Employer's Normal Cost For Year Beginning July 1, 1989

1. Basic retirement annuity	\$ 6,198,611
2. Annual increase in retirement annuity	1,125,440
3. Pre-retirement survivor's annuity	653,526
4. Post-retirement survivor's annuity	669,588
5. Withdrawal benefits, including refunds	1,805,616
6. Pre-retirement death benefit	154,983
7. Post-retirement death benefit	31,211
8. Children's annuity	48,960
9. Ordinary disability benefit	963,381
10. Duty disability benefit	151,459
11. Administrative expenses	617,412
12. Total normal cost	\$ 12,420,187
13. Employee contributions	8,694,151
14. Employer's share of normal cost	\$ 3,726,036
15. Total payroll	\$ 101,444,720
16. Employer's share of normal cost as a percent of payroll	3.67%

G. EMPLOYER'S FUNDING REQUIREMENT

The employer's funding requirement of normal cost plus interest on the unfunded liability for the year beginning July 1, 1989 is developed in Exhibit 5.

An employer contribution of normal cost plus interest on the unfunded liability can be considered to be a minimum contribution level for public



retirement systems. By paying the normal cost each year, the accruing cost of pensions is met as service is rendered by employees. By paying interest on the unfunded actuarial liability, the unfunded actuarial liability is stabilized. Although no attempt is made to pay off the unfunded actuarial liability, this approach is nevertheless considered acceptable for public retirement systems where permanence can be taken for granted and full funding is not regarded as essential.

It can be seen from Exhibit 5 that for the year beginning July 1, 1989, the employer funding requirement of normal cost plus interest on the unfunded actuarial liability amounts to \$7,795,074.

Employer contributions to the Fund come from a tax levied upon all taxable property in the city of Chicago. The amount of tax presently levied is 1.10 times the amount of employee contributions made 2 years previously. The 1.10 is known as the tax multiple. Based on the 1.10 tax multiple, we have estimated employer contributions for the year beginning July 1, 1989 to be \$8,256,785. Thus, employer contributions for the year are expected to exceed the funding requirement of normal cost plus interest on the unfunded liability by \$461,711.

Exhibit 5

Funding Requirement For Year Beginning July 1, 1989

1. Employer's share of normal cost	\$ 3,726,036
2. Interest on the unfunded actuarial liability	<u>4,069,038</u>
3. Employer's funding requirement of normal cost plus interest on the unfunded actuarial liability	\$ 7,795,074
4. Estimated employer contribution for the year	<u>8,256,785</u>
5. Estimate of amount by which employer contributions are expected to exceed the funding requirement of normal cost plus interest on the unfunded liability	\$ 461,711

H. RECONCILIATION OF CHANGE IN UNFUNDED ACTUARIAL LIABILITY

The net actuarial experience during the period July 1, 1988 to June 30, 1989 resulted in a decrease in the Fund's unfunded actuarial liability of \$6,491,325. This decrease in unfunded actuarial liability is a result of several kinds of gains and losses. The financial effect of the most significant gains and losses is illustrated in Exhibit 6.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$8,138,255, whereas the actual employer contribution for the year amounted to \$8,094,045. Thus, the employer contribution for the year fell \$44,210 short of meeting normal cost plus interest on the unfunded liability. Had all other aspects of the Fund's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The value of assets increased at a rate of approximately 9.7% during the year in comparison to the assumed rate of 7.5%. This resulted in a decrease in the unfunded liability of \$6,108,000. Salaries increased at an average rate of 6.0% per year in comparison with an assumed rate of 5.5%, resulting in an increase in the unfunded liability of \$923,000.

The various other aspects of the Fund's experience resulted in a net decrease in the unfunded actuarial liability of \$1,350,535.

The aggregate financial experience of the fund resulted in a decrease in the unfunded actuarial liability of \$6,491,325.

Exhibit 6
Reconciliation of Change in Unfunded Actuarial Liability
Over the period July 1, 1988 to June 30, 1989

1. Unfunded actuarial liability as of 7/1/88	\$ 62,742,909
2. Employer contributions requirement of normal cost plus interest on unfunded liability for period 7/1/88 to 6/30/89	8,138,255
3. Actual employer contribution for the year	8,094,045
4. Increase in unfunded liability due to employer contribution being less than normal cost plus interest on unfunded liability	44,210
5. Decrease in unfunded liability due to investment return greater than assumed	6,108,000
6. Increase in unfunded liability due to salary increase higher than assumed	923,000
7. Decrease in unfunded liability due to other sources	\$ 1,350,535
8. Net decrease in unfunded liability for the year (5+7-4-6)	\$ 6,491,325
9. Unfunded actuarial liability as of June 30, 1989 (1-8)	\$ 56,251,584



I. ACTUARIAL PRESENT VALUE OF CREDITED PROJECTED BENEFITS

In November 1986, the Government Accounting Standards Board (GASB) issued Statement No. 5 entitled Disclosure of Pension Information by Public Employee Retirement Systems and State and Local Government Employers. The statement establishes standards of disclosure of pension information by public employee retirement systems.

GASB Statement No. 5 requires the disclosure of the actuarial present value of credited projected benefits as the standardized measure of the accrued pension obligation. This measure represents the discounted value of the amount of benefits estimated payable in the future as a result of employee service to date, computed by attributing an equal benefit amount to each year of service of the employee.

We have therefore calculated the actuarial present value of credited projected benefits as part of the actuarial valuation. The results of our calculations are shown in Exhibit 7. It can be seen from Exhibit 7 that the actuarial present value of credited projected benefits as of June 30, 1989 amounts to \$327,273,638 and the unfunded actuarial present value of credited projected benefits amounts to \$29,002,324.

Exhibit 7

Actuarial Present Value of Credited Projected Benefits

1. For members in receipt of benefits and for inactive members	\$ 163,641,827
2. For current employees	
Accumulated employee contributions	95,187,441
Employer-financial vested	19,115,732
Employer-financed nonvested	49,328,638
3. Total actuarial present value of credited projected benefits	\$ 327,273,638
4. Net assets available for benefits, at cost (Market value is \$277,890,111) \$318,505,030	\$ 298,271,314
5. Unfunded actuarial present value of credited projected benefits	\$ 29,002,324



J. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of my knowledge, fairly represents the financial condition of the Park Employees' Annuity and Benefit fund as of June 30, 1989.

Respectfully submitted

Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 3402

Appendix 1

Summary of Actuarial Assumptions and Actuarial Cost Method

Mortality Rates. The UP-1984 Mortality Table, rated up 1 year, was used for the valuation.

Termination Rates. Termination rates based on the recent experience of the fund were used. The following is a sample of the termination rates that were used:

<u>Age</u>	<u>Rate of Termination Per 1,000 Members</u>
20	187
25	125
30	87
35	62
40	37
45	24
50	10
55 and later	0

Retirement Rates. Rates of retirement for each age from 55 to 70 based on the recent experience of the fund were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement Per 1,000 Members</u>
55	100
60	150
65	300
70	1,000

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Progression. - 5.5% per year, compounded annually.

Interest Rate. - 7.5% per year, compounded annually.

Marital Status. 75% of participants were assumed to be married.

Spouse's Age. The age of the spouse was assumed to be 2 years younger than that of the employee.



Actuarial Value of Assets. The book value of the assets of the Fund was used.

Actuarial Cost Method. The entry age actuarial cost method was used, with costs allocated on the basis of earnings.



1% for each month the surviving spouse is under age 60. If the employee had less than 20 years of service, the surviving spouse is entitled to a pension under the money purchase formula, taking into account employee and employer contributions toward the surviving spouse's pension.

7. Children's Pension. Unmarried children under the age of 18 of a deceased employee are entitled to a children's pension. If either parent is living, the pension is \$100.00 per month. If no parent survives, the pension for each child is \$150.00 per month. The total amount payable to a spouse or children may not exceed 60% of the employer's final salary.

8. Single Sum Death Benefit. A death benefit is payable upon the death of an employee in service in addition to any other benefits payable to the surviving spouse or minor children. The death benefit payable is as follows:

- \$2,000 benefit during the 1st year of service,
- \$3,000 benefit during the 2nd year of service,
- \$4,000 benefit during the 3rd year of service,
- \$5,000 benefit during the 4th year of service,
- \$6,000 benefit during the 5th through 9th year of service,
- \$10,000 benefit if death occurs after 10 or more years of service

Upon the death of a retired member with 10 or more years of service, the \$10,000 maximum benefit is reduced to \$6,000 if death occurs during the first year of retirement. Thereafter, it is reduced by 1,500 for each year or fraction of a year while on retirement, but shall not be less than \$1,500.

9. Ordinary Disability Benefit. An ordinary disability benefit is payable after 8 consecutive days of absence for illness without pay. The amount of the benefit is 45% of salary. The benefit is payable for a period not to exceed 1/4 of the length of service, but not more than 5 years, or age 70, whichever occurs first.

10. Occupational Disability Benefit. Upon disability resulting from an injury incurred while on duty, an employee is entitled to a disability benefit of 75% of salary from the first day of absence without pay. The benefit is payable during the period of disability incurred at age 60. If disability occurs after age 60, the benefit is payable for 5 years of age 70, whichever occurs first.

11. Occupational Death Benefit. Upon the death of an employee resulting from an accident incurred in the performance of duty, the surviving spouse is entitled to an occupational death benefit of 50% of salary. Each unmarried child under the age of 18 is entitled to a benefit of \$100 per month. The combined payments to a family may not exceed 75% of the employee's final salary. The total payments are reduced by Workmen's Compensation benefits.

12. Refunds. An employee who terminates employment before qualifying for a pension is entitled to a refund of employee contributions. The refund is payable to any employee who withdraws before age 55, regardless of the length of service. It is also payable to an employee who withdraws between age 55



and 60 with less than 10 years service, and to an employee who withdraws after age 60 with less than 5 years of service.

An employee who is unmarried at date of retirement is entitled to a refund of the full amount contributed for the spouse's pension, without interest.



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1. **Actuarial Present Value.** The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
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