

January 26, 1983

Retirement Board of Employees'
Retirement System
State of Rhode Island
198 Dyer Street
Providence, RI 02903

Dear Members of the Board:

We are pleased to submit herewith our Actuarial Valuation of the Employees' Retirement System of the State of Rhode Island as of June 30, 1982.

Our report analyzes the actuarial status of the system, and projects the cost requirements for the Board to certify to the Legislature.

We received a great deal of help from State employees in obtaining the information which forms the basis of this report. Most important, Mr. Donald R. Hickey, Executive Director, Mr. John F. Sullivan, Assistant Director, and Mr. Louis Capizaco, Supervisory Accountant, were available whenever needed to answer any questions and provide any information requested. Indeed, the material they provided on their own initiative anticipated many of our needs.

For convenience, this report is divided into the following sections:

- I. SUMMARY
 - II. EMPLOYEE DATA
 - III. RETIREE DATA
 - IV. RETIREMENT FUND
 - V. ACTUARIAL ASSUMPTIONS AND COST METHOD
 - VI. RESULTS OF VALUATION
- APPENDIX

**EMPLOYEES' RETIREMENT SYSTEM
OF THE STATE OF RHODE ISLAND**


Actuarial Valuation as of
June 30, 1982


Appended to this report is our actuarial certificate detailing the cost factors, assumptions, and plan of benefits used for the valuation.

We will be pleased to meet with you to discuss this report at your convenience.

Sincerely,

MARTIN E. SEGAL COMPANY, INCORPORATED

By 
Sherman G. Sass
Senior Vice President

By 
James R. Laws, F.S.A., M.A.A.A.
Senior Vice President and Actuary

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I. SUMMARY

Benefit Provisions

The Employees' Retirement System of the State of Rhode Island covers most State employees. Legislators and elected officials may become members on an optional basis. State college teachers may elect coverage under the T.I.A.A. program. State employees contribute 7 1/2* percent of their annual earnings and Teachers contribute 8 1/2* percent.

The System provides unreduced benefits of 1.7 percent of earnings for each of the first ten years of service; 1.9 percent for each of the next ten years; 3.0 percent per year for each of the next fourteen years; and 2 percent for the 35th year. The maximum benefit is 80 percent of final average earnings after 35 years of service. Such benefits are available to members at least age 60 with 10 years of service, or after 30 years at any age. State correctional officers may retire at age 50 if they have 20 years of service, at 2 percent for each of the first 30 years of service; 6 percent for the 31st year; 5 percent for the 32nd year; 4 percent for the 33rd year; 3 percent for the 34th year; and 2 percent for the 35th year. Benefits are based on the average of the highest three consecutive years' earnings. After the third anniversary of retirement, "cost-of-living increases" amounting to 3 percent per year are provided, independent of actual changes in the Consumer Price Index. Beginning January 1, 1981, the cost-of-living increases are computed at the rate of 3 percent compounded annually; prior to 1981, the cost-of-living benefits equalled 3 percent of the original award.

The Plan also provides non-service-connected disability after five years of service; service-connected disability pensions with no minimum service requirement; vested benefits after ten years of service; widow's benefits for service-connected death; and certain lump sum death benefits.

*Prior to July 1, 1980 the rates were 7 percent for State employees and 8 percent for Teachers.

More detail regarding the benefit provisions can be found in the actuarial certificate following this report.

Employee Data

We received data on 15,011 active State Employees and 10,753 Teachers as of June 30, 1988 who were participating in the System. On the average, the State Employees were age 43 1/2 and had 10 1/2 years of service; Teachers were age 44 with 16 years of service.

Retiree Data

We received data on 6,495 State Employee pensioners and 528 beneficiaries as of June 30, 1988. The pensioners' average monthly benefit was \$631, which is approximately 6% greater than the average benefit on June 30, 1987. There were 3,428 retired Teachers and 149 beneficiaries; the average monthly benefit was \$1,238 for the pensioners, which is approximately 8% greater than the average benefit a year earlier. The benefit amounts include an adjustment for the cost-of-living provision. Of all the pensioners on the rolls, 5 percent had retired in the year ended June 30, 1988.

Retirement Fund

As of June 30, 1988, the assets of the Retirement Fund at book value, including Teachers Survivors Reserves, amounted to approximately \$1.403 billion. Effective June 30, 1985, the Board adopted an asset valuation method which recognizes the market value of assets but smoothes the fluctuations in the market value of assets. The asset value on this basis is referred to as the actuarial value of assets. On this basis, the assets amounted to \$1.498 billion as of June 30, 1988. These assets are available as an offset to the actuarial liabilities for future benefits. At market value, assets totalled \$1.632 billion on June 30, 1988.

Actuarial Valuation

The actuarial valuation was prepared as of June 30, 1988. Our calculations were based on reasonable assumptions as to expected future

experience. For this valuation we have not revised any of the actuarial assumptions or methods. With our June 30, 1985 valuation, we incorporated the legislated change in the cost method to the entry age normal cost with the frozen initial liability method which became effective July 1, 1985. Funding of the frozen initial liability is based on the sum of the digits amortization basis plus interest on the outstanding liability. All of the assumptions and methods are detailed in the attached Certificate of Actuarial Valuation.

The employer normal cost* for State Employees is \$19.8 million. This represents 5.7 percent of the reported payroll of participating State Employees as of June 30, 1988. The employer normal cost for Teachers is \$23.9 million or 6.5 percent of reported participating payroll.

For State Employees, the unfunded actuarial accrued liability* as of June 30, 1988 is \$431 million. For Teachers, the unfunded actuarial accrued liability as of June 30, 1988 is \$743 million. The unfunded actuarial accrued liabilities as of June 30, 1985 have been "frozen" and are being amortized over 30 years.

The combined value of the System's vested benefits is \$1.972 billion. The assets at actuarial value (excluding assets of the Teachers Survivors program) are short of this amount by \$523 million.

For the 1989-90 fiscal year, the State's statutory funding schedule, as amended effective July 1, 1979, calls for a contribution of 100 percent of the employer normal cost, 100 percent of the interest on the unfunded actuarial accrued liability and the fourth amortization payment on the frozen unfunded liability. For State Employees, these total to \$58.7 million, or 14.7 percent of the projected 1989-90 payroll of \$400.4 million and, for Teachers, the total employer costs are \$87.8 million, or 21.6 percent of projected payroll of \$407.0 million. (Half of the cost for

*Please refer to Section V, "Actuarial Assumptions and Cost Method", for definitions of these terms.

Teachers is paid for by the municipalities.) In accordance with the statute as amended, the percentages of normal cost and interest on the unfunded liability reported to be contributed have substantially increased by the 100 percent level existing in fiscal 1985-86. Beginning in fiscal 1986-87, amortization of the frozen unfunded liabilities was being computed and has been recognized in the recommendations made in this report, and the preceding three volumes.

11. EMPLOYMENT

As mentioned above in 1981, State Employees and 10,750 Teachers participated in the system in June 30, 1982. The State included age, service, sex, and salary for each participant. The average salary as of June 30, 1982 of the participants was \$23,725 for State Employees and \$26,266 for Teachers. The total included 552 contractually obligated employees.

Tables 16 and 17 give detailed age, service and average salary data on State Employees and Teachers, respectively. In comparing these tables, we assumed an annual salary of \$21,000 for the State Employees for whom salaries were available, and a \$27,000 annual salary for Teachers when various averages.

Tables 16 and 17 summarize available salary statistics in active State Employees and Teachers and compare them to those of the previous year. During the year, the average salary for State Employees increased by 6.5 percent while Teachers' average salary increased by 7.6 percent. Aggregate salary increased by 11.8 percent for State Employees and by 6.9 percent for Teachers.

Number and Average Relation of Employment to Active Service
 as of June 30, 1941 by Age and by Years of Service

TABLE 1A

Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 and over
Number	10,713	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
Average	107.13	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
0 - 4	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
5 - 9	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
10 - 14	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
15 - 19	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
20 - 24	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
25 - 29	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
30 - 34	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
35 - 39	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
40 and over	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073

Number and Average Relation of Employment to Active Service
 as of June 30, 1941 by Age and by Years of Service

TABLE 1A

Age	Total	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 and over
Number	10,713	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
Average	107.13	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3	107.3
0 - 4	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
5 - 9	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
10 - 14	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
15 - 19	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
20 - 24	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
25 - 29	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
30 - 34	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
35 - 39	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073
40 and over	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073	1,073

Table 2a

Statistical Data on Active State Employees
on June 30, 1968 and 1967

	June 30, 1968	June 30, 1967
Number of covered employees	15,011	14,375
Total annual salary	\$246,432,500	\$209,943,000
Average annual salary	\$23,100	\$21,600
Average age	43 1/2	43 1/2
Average years of service	10 1/2	10
Number eligible for service retirement	1,373	1,034
Number vested but not eligible to retire	5,841	5,506

RHODE ISLANDERS

Table 2b

Statistical Data on Active Teachers
on June 30, 1968 and 1967

	June 30, 1968	June 30, 1967
Number of covered employees	15,753	15,337
Total annual salary	\$268,248,300	\$244,596,000
Average annual salary	\$24,200	\$22,400
Average age	44	44
Average years of service	16	16
Number eligible for service retirement	887	756
Number vested but not eligible to retire	7,026	7,000

RHODE ISLANDERS

III. RETIREE DATA

The data on retired members and beneficiaries included age, sex, monthly benefit, retirement date, option, and type of pension.

The following are significant statistics on the retired groups:

	State Employees	Teachers
Pensioners:		
Number	6,495	8,428
Average age	70 1/2	72 1/2
Average monthly benefit	\$631	\$1,238
Beneficiaries:		
Number	528	149
Average age	72	70 1/2
Average monthly benefit	\$564	\$754

During the 1987-88 fiscal year, there were 208 new State Employee retirees. This may be compared to the 936 new State retirees during the preceding fiscal year. This significant decrease is attributable to the early retirement incentive program which was in effect during part of the 1986-87 fiscal year.

Table 3A shows a distribution of the 208 State Employee pensions which became effective during the 1987-88 fiscal year by type and amount of pension. Table 4A shows a distribution of these same new awards by type of pension and age at retirement. Tables 3B and 4B are the corresponding distributions for the 270 Teacher pensions which became effective during the 1987-88 fiscal year.

Tables 5A and 5B show distributions for all pensions in force as of June 30, 1988 by type and amount of pension. Tables 6A and 6B show distributions of these same retirees by type of pension and age as of June 30, 1988.

Table 3A
Pensions Awarded in the Year Ended June 30, 1988
by Type and by Monthly Amount

STATE EMPLOYEES

Monthly amount	Total	Type of pension				Beneficiary
		Service	Ordinary Disability	Accidental Disability	Legislator	
Total	208	163	25	1	9	10
\$ 50 - 99	3	2	1	1		
100 - 149	5	2	2			
150 - 199	8	5	2			
200 - 249	24	17	6			
250 - 299	11	9	1			
300 - 349	9	9				
350 - 399	9	9				
400 - 449	8	6	2			
450 - 499	12	9	2			
500 - 599	17	15	1			
600 - 699	8	5	2			
700 - 799	14	11	3			
800 - 899	12	7	2			
900 - 999	9	6	1			
1,000 - 1,099	12	7	1			
1,100 - 1,199	3	2	1			
1,200 - 1,299	5	5				
1,300 - 1,399	4	3				
1,400 - 1,499	2	2				
1,500 - 1,999	16	16				
2,000 - 2,499	6	6				
2,500 - 2,999	6	5				
3,000 - 3,499	4	4				
4,500 - 4,999	1	1				

Table 3B

Pensions Awarded in the Year Ended June 30, 1988
by Type and by Monthly Amount

TEACHERS

Monthly amount	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	270	254	7	4	5
\$ 200 - 249	1	1	--	--	--
250 - 299	1	--	--	--	1
300 - 349	1	--	--	1	--
350 - 399	1	1	--	--	--
400 - 449	1	--	1	--	--
450 - 499	1	--	--	--	1
500 - 599	4	3	--	1	--
600 - 699	5	3	2	--	--
700 - 799	4	3	1	--	--
800 - 899	9	9	--	--	--
900 - 999	5	5	--	--	--
1,000 - 1,099	18	14	1	1	2
1,100 - 1,199	8	7	1	--	--
1,200 - 1,299	7	7	--	--	--
1,300 - 1,399	12	12	--	--	--
1,400 - 1,499	11	10	--	--	1
1,500 - 1,999	54	52	1	1	--
2,000 - 2,499	78	78	--	--	--
2,500 - 2,999	33	33	--	--	--
3,000 - 3,499	12	12	--	--	--
3,500 - 3,999	4	4	--	--	--

RHODE ISLAND ERS

Table 5A

Pensions Awarded in the Year Ended June 30, 1988
by Type and by Age on Effective Date

STATE EMPLOYEES

Age on effective date	Total	Type of pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	208	163	25	1	9	10
40 - 44	2	--	--	--	--	2
45 - 49	6	--	3	--	1	2
50	3	--	1	--	1	1
51	2	2	--	--	--	--
52	3	1	2	--	--	--
53	1	--	1	--	--	--
54	5	1	3	--	1	--
55	7	2	1	--	4	--
56	3	1	1	1	--	--
57	3	1	2	--	--	--
58	9	1	6	--	1	1
59	9	7	2	--	--	--
60	38	36	--	--	--	2
61	12	11	1	--	--	--
62	25	25	--	--	--	--
63	12	11	--	--	--	1
64	15	14	1	--	--	--
65	24	24	--	--	--	--
66	7	7	--	--	--	--
67	4	4	--	--	--	--
68	8	6	1	--	--	1
69	6	6	--	--	--	--
70 - 74	4	3	--	--	1	--

RHODE ISLAND ERS

Table 4B

Pensions Awarded in the Year Ended June 30, 1988
by Type and by Age on Effective Date

TEACHERS

Age on effective date	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	270	254	7	4	5
30 - 34	1	--	--	--	1
35 - 39	3	--	2	1	--
40 - 44	2	--	--	1	1
45 - 49	1	--	--	1	--
50	1	1	--	--	--
51	4	4	--	--	--
52	10	9	1	--	--
53	11	10	1	--	--
54	10	9	1	--	--
55	21	20	1	--	--
56	14	14	--	--	--
57	15	13	1	1	--
58	15	13	--	--	2
59	14	14	--	--	--
60	40	40	--	--	--
61	30	30	--	--	--
62	17	16	--	--	1
63	12	12	--	--	--
64	11	11	--	--	--
65	15	15	--	--	--
66	8	8	--	--	--
67	2	2	--	--	--
68	2	2	--	--	--
69	2	2	--	--	--
70 - 74	9	9	--	--	--

RHODE ISLAND ERS

Table 5A

Pensions in Payment Status on June 30, 1988
by Type and by Monthly Amount

STATE EMPLOYEES

Monthly amount	Total	Type of pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	7,023	5,760	480	103	152	528
Under \$50	13	9	--	4	--	--
\$ 50 - 99	182	140	13	9	--	20
100 - 149	299	236	24	11	--	28
150 - 199	660	536	65	6	--	53
200 - 249	670	528	89	6	--	47
250 - 299	557	444	78	2	--	33
300 - 349	478	397	37	8	--	36
350 - 399	441	367	37	2	--	35
400 - 449	326	270	25	2	3	26
450 - 499	323	269	23	1	5	25
500 - 599	536	440	25	9	23	39
600 - 699	378	298	15	12	21	32
700 - 799	343	261	19	10	22	31
800 - 899	286	233	13	4	14	22
900 - 999	234	194	6	7	9	18
1,000 - 1,099	228	176	5	5	22	20
1,100 - 1,199	151	115	4	1	13	18
1,200 - 1,299	126	91	--	--	20	15
1,300 - 1,399	102	96	--	1	--	5
1,400 - 1,499	104	99	--	--	--	5
1,500 - 1,999	354	337	2	3	--	12
2,000 - 2,499	139	136	--	--	--	3
2,500 - 2,999	56	52	--	--	--	4
3,000 - 3,499	26	26	--	--	--	--
3,500 - 3,999	9	8	--	--	--	1
4,500 - 4,999	2	2	--	--	--	--

RHODE ISLAND ERS

HOOR ELMND RRR

Age on June 30, 1988	Total	Review	Ordinary Disability	Accidental Disability	Long-Term	Non-Fatal
10 - 14	0	0	0	0	0	0
15 - 19	13	13	0	0	0	0
20 - 24	26	1	13	0	0	0
25 - 29	90	12	14	0	0	0
30 - 34	100	13	13	0	0	0
35 - 39	1118	133	104	0	0	0
40 - 44	1700	196	103	0	0	0
45 - 49	1688	133	101	0	0	0
50 - 54	1088	1301	28	0	0	0
55 - 59	923	923	14	0	0	0
60 - 64	282	282	0	0	0	0
65 - 69	282	181	1	0	0	0
70 - 74	28	28	0	0	0	0
75 - 79	15	15	0	0	0	0
80 - 84	0	0	0	0	0	0
85 - 89	0	0	0	0	0	0
90 - 94	0	0	0	0	0	0
95 - 99	0	0	0	0	0	0
100 - 104	0	0	0	0	0	0
Total	2,023	3,700	480	103	132	28

STATE EMPLOYERS

Payments in Payment Status on June 30, 1988 by Type and by Age

Table 2A

HOOR ELMND RRR

Monthly Amount	Total	Review	Ordinary Disability	Accidental Disability	Non-Fatal
0	4	4	0	0	0
100	46	1	1	0	0
200	10	1	0	0	0
300	30	0	0	0	0
400	10	0	0	0	0
500	100	143	0	0	0
600	108	137	0	0	0
700	108	124	0	0	0
800	108	123	0	0	0
900	108	108	0	0	0
1000	200	200	0	0	0
1100	200	200	0	0	0
1200	200	200	0	0	0
1300	200	200	0	0	0
1400	200	200	0	0	0
1500	200	200	0	0	0
1600	200	200	0	0	0
1700	200	200	0	0	0
1800	200	200	0	0	0
1900	200	200	0	0	0
2000	200	200	0	0	0
2100	200	200	0	0	0
2200	200	200	0	0	0
2300	200	200	0	0	0
2400	200	200	0	0	0
2500	200	200	0	0	0
2600	200	200	0	0	0
2700	200	200	0	0	0
2800	200	200	0	0	0
2900	200	200	0	0	0
3000	200	200	0	0	0
3100	200	200	0	0	0
3200	200	200	0	0	0
3300	200	200	0	0	0
3400	200	200	0	0	0
3500	200	200	0	0	0
3600	200	200	0	0	0
3700	200	200	0	0	0
3800	200	200	0	0	0
3900	200	200	0	0	0
4000	200	200	0	0	0
4100	200	200	0	0	0
4200	200	200	0	0	0
4300	200	200	0	0	0
4400	200	200	0	0	0
4500	200	200	0	0	0
4600	200	200	0	0	0
4700	200	200	0	0	0
4800	200	200	0	0	0
4900	200	200	0	0	0
5000	200	200	0	0	0
5100	200	200	0	0	0
5200	200	200	0	0	0
5300	200	200	0	0	0
5400	200	200	0	0	0
5500	200	200	0	0	0
5600	200	200	0	0	0
5700	200	200	0	0	0
5800	200	200	0	0	0
5900	200	200	0	0	0
6000	200	200	0	0	0
6100	200	200	0	0	0
6200	200	200	0	0	0
6300	200	200	0	0	0
6400	200	200	0	0	0
6500	200	200	0	0	0
6600	200	200	0	0	0
6700	200	200	0	0	0
6800	200	200	0	0	0
6900	200	200	0	0	0
7000	200	200	0	0	0
7100	200	200	0	0	0
7200	200	200	0	0	0
7300	200	200	0	0	0
7400	200	200	0	0	0
7500	200	200	0	0	0
7600	200	200	0	0	0
7700	200	200	0	0	0
7800	200	200	0	0	0
7900	200	200	0	0	0
8000	200	200	0	0	0
8100	200	200	0	0	0
8200	200	200	0	0	0
8300	200	200	0	0	0
8400	200	200	0	0	0
8500	200	200	0	0	0
8600	200	200	0	0	0
8700	200	200	0	0	0
8800	200	200	0	0	0
8900	200	200	0	0	0
9000	200	200	0	0	0
9100	200	200	0	0	0
9200	200	200	0	0	0
9300	200	200	0	0	0
9400	200	200	0	0	0
9500	200	200	0	0	0
9600	200	200	0	0	0
9700	200	200	0	0	0
9800	200	200	0	0	0
9900	200	200	0	0	0
10000	200	200	0	0	0
Total	3,700	3,700	480	103	132

TEACHERS

Payments in Payment Status on June 30, 1988 by Type and by Monthly Amount

Table 2B

Table 6B
Pensions in Payment Status on June 30, 1988
by Type and by Age

TEACHERS

Age on June 30, 1988	Total	Type of pension			Beneficiary
		Service	Ordinary Disability	Accidental Disability	
Total	3,577	3,290	119	19	149
30 - 34	1	--	--	--	1
35 - 39	5	--	5	--	--
40 - 44	9	--	4	2	3
45 - 49	9	--	4	2	3
50 - 54	59	30	17	3	9
55 - 59	219	183	18	3	15
60 - 64	528	483	25	3	17
65 - 69	682	642	21	2	17
70 - 74	626	591	12	4	19
75 - 79	637	611	7	--	19
80 - 84	517	480	3	--	34
85 - 89	197	186	2	--	9
90 - 94	76	74	1	--	1
95 - 99	12	10	--	--	2

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IV. RETIREMENT FUND

The State maintains the Employees' Retirement Fund. The Retirement Board provided us with financial statements as of June 30, 1988.

The Fund receives all member and employer contributions. The assets are invested by the State Investment Commission, with the income being added to the Fund and available for reinvestment.

Payments from the Fund are primarily for refunds of employee contributions, lump sum death benefits, and pension payments. Contribution refunds occur when an employee terminates employment and elects to take a refund, or when he dies after retirement without having received payments from the Fund equal to his total contributions.

Table 7 provides a summary of income and expenditures for the years ended June 30, 1988 and 1987.

On June 30, 1988, assets as reported by the State totalled approximately \$1.403 billion. Table 8 shows the composition of the assets and compares them to those of the previous year. About 67 percent of the Fund was invested in fixed income securities such as bonds and notes. This represents a drop of 1 percent from a year earlier.

The financial statements indicate that 46 percent of the assets relate to State Employees, 51 percent are for Teachers, and 3 percent relate to Teachers Survivors benefits. There is also a small unallocated reserve for unclaimed benefits. Table 9 shows the allocation of assets in detail as of June 30, 1988 and 1987.

Assets prior to June 30, 1985 were carried at values as reported by the State. Bonds were carried at amortized cost value and stocks were carried at cost value. Beginning with the June 30, 1985 actuarial valuation, the Board adopted an asset valuation method for actuarial cost

purposes which takes fair market value into account without subjecting the system to abnormal cost fluctuations from year to year as a result of short term changes in market value.

On the "actuarial value" basis, the assets on June 30, 1988 amounted to \$1,497,690,493. The development of this amount is shown in the following chart:

Determination of Actuarial Value of Assets

1. Actuarial value of assets at beginning of year	\$1,308,812,548
2. Net new money (including dividends and interest)	155,376,743
3. Preliminary value of assets at end of year: (1) + (2)	1,464,189,291
4. Market value of assets at end of year	1,631,695,303
5. Minimum actuarial value: 80% of (4)	1,305,356,242
6. Maximum actuarial value: 120% of (4)	1,958,034,364
7. Trial write-up: 20% of [(4) - (3)]	33,501,202
8. Trial actuarial value: (3) + (7)	1,497,690,493
9. Final actuarial value of assets at end of year: (8), but not less than (5) or more than (6)	1,497,690,493
10. Final write-up: (9) - (3)	33,501,202

This determination is used for two purposes:

First, the actuarial value is applied in determining the value of assets used in the actuarial calculations to determine the annual costs.

Second, the amount of write-up or write-down is considered part of the investment yield for the year.

This procedure treats realized and unrealized capital gains equally. In other words, the sale of a security - either at a gain or loss - will have no effect on the actuarial value. This should remove from the area of investment decisions any consideration of the impact of security sales on the actuarial cost of the plan.

Table 7

Summary Statement of Income and Expenses
For the Years Ended June 30, 1988 and 1987

	1988	1987
Employer contributions	\$101,038,075	\$ 98,939,864
Member contributions	<u>62,058,104</u>	<u>52,132,541</u>
Total contributions	\$163,096,179	\$151,072,405
Net miscellaneous items	1,527,117	555,617
Investment income:		
Dividends	\$ 21,821,343	
Interest	79,298,221	\$ 19,295,496
Capital gains and (losses)	39,128,356	68,766,648
Expenses	<u>1,536,544</u>	<u>20,877,873</u>
Net investment income	138,711,377	964,595
Total income available for benefit payments	\$303,334,673	<u>107,975,422</u>
Benefits payments:		
Pension benefits	\$102,476,658	\$ 91,249,113
Death benefits	2,371,688	2,316,014
Contribution refunds	<u>3,981,228</u>	<u>4,183,334</u>
Total benefit payments	108,829,573	<u>97,748,461</u>
Excess of income over expenses	<u>\$194,505,099</u>	<u>\$161,854,984</u>

Note: Detail figures may not add to totals shown because of rounding.

Notes: Details figures may not add to totals shown because of rounding.

1987	1988	1989
444,444,444	444,444,444	444,444,444
111,111,111	111,111,111	111,111,111
222,222,222	222,222,222	222,222,222
333,333,333	333,333,333	333,333,333
444,444,444	444,444,444	444,444,444
555,555,555	555,555,555	555,555,555
666,666,666	666,666,666	666,666,666
777,777,777	777,777,777	777,777,777
888,888,888	888,888,888	888,888,888
999,999,999	999,999,999	999,999,999
1,111,111,111	1,111,111,111	1,111,111,111
2,222,222,222	2,222,222,222	2,222,222,222
3,333,333,333	3,333,333,333	3,333,333,333
4,444,444,444	4,444,444,444	4,444,444,444
5,555,555,555	5,555,555,555	5,555,555,555
6,666,666,666	6,666,666,666	6,666,666,666
7,777,777,777	7,777,777,777	7,777,777,777
8,888,888,888	8,888,888,888	8,888,888,888
9,999,999,999	9,999,999,999	9,999,999,999
10,000,000,000	10,000,000,000	10,000,000,000

Table 8
Assets as of June 30, 1988 and 1987

1987	1988	Total Assets
15,623,508	18,609,219	34,232,727
3,040,328	16,543,104	19,583,432
5	5	10
370,600,960	421,663,315	792,264,275
275,391,711	374,500,000	649,891,711
500,000	700,000	1,200,000
(3,589,745)	1,367,808,761	764,219,016
1,189,792,157	4,822,991,984	6,012,784,141
91,208,455,985	1,402,991,984	92,611,447,969

Table 8
Assets as of June 30, 1988 and 1987

9. ACTUARIAL ASSUMPTIONS AND 1991 RATES

The actual cost of a pension plan consists of the benefit payments and administrative expenses less any investment earnings. An actuarial cost method aims to budget this cost so as to establish a reasonable rate-of-pay which balances employer pension contributions and the employee service that gives rise to the pension obligation. The result is a series of employer contributions over a long period of years. A good assumption which enters investment income, then reducing the ultimate cost. Beginning with the June 30, 1985 actuarial valuation, the actuarial cost method was changed as set forth in Section 46-102 of the General Laws of Rhode Island. This method is outlined at the end of this section.

Calculating the appropriate contribution requires that projections, and therefore assumptions, be made as to future experience. Some items, such as mortality rates, can be predicted fairly accurately. Others, such as future salary increases and, of course, subject to considerable variation. It will be useful to identify the assumptions used, particularly since broad questions of fiscal policy are implicit in certain of the assumptions. The assumptions applied in this valuation are the same as those used in the June 30, 1985 study.

Mortality Rates

We continue to apply mortality rates taken from the Rate and Benefit 1991 Group Annuity Mortality Tables. These are commonly used tables of pension plan mortality, and we believe they continue to be reasonable for estimating experience under the System. Table 10 please name 1114- experience determined from these tables.

Salary Projections

The System provides benefits that are based on the three highest consecutive years' salary for each employee. To assume that each employee's salary will be the same in the three years before retirement as it is today would seriously underestimate the System's costs. Accordingly, we use a salary projection to anticipate future increases in salaries.

Additionally, it is appropriate to compare pension costs which are based on a percentage of benefit rather than level as a better measure, and a salary projection is also used for this purpose. If the cost were calculated as a level dollar amount for an individual, the cost might be a high percent of his pay when he is young and a lower percent of his higher salary at a later age. Anticipating pension costs which remain a level percentage of salary means that pension costs will be incurred at the same rate as salary is paid to an employee.

The projection of future salaries was analyzed, among other items, future general salary increases. Over the long term, it can be expected that these will parallel or slightly exceed the level of inflation. If the salary increase assumption exceeds actual future salary increases, then pension contributions will exceed the actual cost requirement and actuarial assumption will develop. Alternatively, if future salary increases exceed the assumption, then pension contributions will be less than the actual cost requirement and actuarial losses will develop.

For purposes of our cost determination, we have made a reasonable allowance for general salary increases in the future. We also reflect salary increases as the result of merit, promotion, and longevity. The scale has relatively greater increases at the younger ages to correspond with the State's salary schedules. Salary scale factors at sample ages are shown below:

Age	Present Salary as a % of Age 65 Salary	Annual Increases (Rate %)
20	11.30	5.85
25	15.00	5.77
30	19.79	5.61
35	25.91	5.61
40	33.52	5.09
45	42.66	4.73
50	53.43	4.45
55	66.26	4.34
60	82.02	4.17

As noted below, the problem of salary projection has a parallel in the question of choosing an assumption as to future investment yield and the two are somewhat interrelated.

Investment Return

Investment return has a major effect on the ultimate cost of a retirement system. To demonstrate, consider an actuarially funded retirement system with investment earnings of 6 1/2% annually. If investment earnings were to increase from 6 1/2% to 8%, then the long term costs of the retirement system would be reduced by 15% to 20%.

An assumption must be made concerning future investment yields. It must be a rate that will be valid for the long-run, that is, not only for funds invested today or next year, but also for funds invested 40 or more years from now.

With the June 30, 1985 actuarial valuation, the investment return assumption was increased from 7% to 7 1/2%. This assumption allows for a moderate long term inflation rate and considers the higher rates on currently invested assets. It is also consistent with the salary scale factors discussed above.

Termination Rates

In any employee group, many employees will terminate and receive less than full benefits. Employees terminating with less than ten years of active service, for example, receive only a refund of their contributions. The termination assumption anticipates the release of State and Town funds that may have been accumulated for such people, thus resulting in a reduced ongoing cost.

The following chart provides termination rates for each cause at illustrative ages:

<u>State Employees (Rate %)</u>				
<u>Age</u>	<u>Death*</u>	<u>Disability</u>	<u>Withdrawal</u>	<u>Total*</u>
20	.05			
25	.06	.06	21.20	21.31
30	.08	.09	15.80	15.95
35	.11	.11	11.60	11.79
40	.16	.15	8.40	8.66
45	.29	.22	6.20	6.58
50	.53	.36	4.20	4.85
55	.85	.61	2.60	3.73
60	1.31	1.01	--	1.86
		--	--	1.31

15% of the above disability rates are assumed service-connected disabilities.

<u>Teachers (Rate %)</u>				
<u>Age</u>	<u>Death*</u>	<u>Disability</u>	<u>Withdrawal</u>	<u>Total*</u>
20	.05			
25	.06	.06	12.39	12.50
30	.08	.09	9.70	9.85
35	.11	.11	7.50	7.69
40	.16	.15	5.66	5.92
45	.29	.22	4.14	4.52
50	.53	.36	2.75	3.41
55	.85	.61	1.35	2.49
60	1.31	1.01	--	1.86
		--	--	1.31

15% of the above disability rates are assumed service-connected disabilities.

*Rates shown are for men; rates for women are slightly lower.

Note: Detail figures may not add to totals shown because of rounding.

Retirement Ages

The System provides unreduced benefits upon completion of 30 years of service for general employees and age 50 for State Correctional Officers. We assume State Employees will retire at age 63, or upon the completion of ten years of service if later. Teacher retirements are assumed to occur when the teacher has attained age 61 1/2 and completed ten or more years of service. In any case where the employee already meets these assumed conditions of age and service, it is assumed that he or she will retire immediately.

Post-Retirement Increases

Following the third anniversary of retirement, cost-of-living increases are regularly provided to pensioners. Our calculations recognize the 3 percent annual benefit increase provided by Statute. Cost-of-living increases are now "compounded" from year to year. With this valuation we took into account the adjustment effective January 1, 1989 and all subsequent 3% increases.

Actuarial Cost Method

This valuation is performed using the Entry Age Normal Cost Method with Frozen Initial Liability, hereafter referred to as the Frozen Initial Liability Method. The change from Entry Age Normal Cost Method was legislated effective with the July 1, 1985 actuarial valuation.

Under the Frozen Initial Liability Method, the Actuarial Present Value of Benefits for all participants (including both past and future benefit accruals) is divided into three components, as follows:

- (a) Assets on hand (i.e., benefits already funded);
- (b) Unfunded Frozen Initial Liability, which equals the unfunded actuarial accrued liability as of June 30, 1985 based on the Entry Age Normal Cost Method, adjusted each year for expected reductions, the effect of plan amendments, and the effect of changes in actuarial assumptions; and

- (c) Actuarial Present Value of Future Normal Costs, which is the balance, and which effectively includes all variations from expected experience.

The annual cost requirement consists of three items -- (1) the amount which will amortize the principal portion of the Unfunded Frozen Initial Liability over 30 years from July 1, 1986 using the sum-of-the-digits method plus (2) the interest on the outstanding balance of the Unfunded Frozen Initial Liability plus (3) the Normal Cost, which is the current annual amount which will fund the Actuarial Present Value of Future Normal Costs over the working lifetime of the active participants. The Normal Cost is calculated as a level percent of pay and the amortization payment is calculated as an increasing dollar amount. The interest cost on the outstanding balance of the Unfunded Frozen Initial Liability will decrease each year as the outstanding balance is reduced.

Overall Actuarial Basis

We believe that the actuarial assumptions, taken as a whole, are reasonable. To the extent that actual experience is better or worse than assumed, actuarial gains or losses will develop, with corresponding decreases or increases in future costs.

Missing Data

It was necessary to make certain "non-actuarial" assumptions where data was missing or incomplete with respect to some individual participants. In all cases, we assumed such individuals had the same average characteristics as other participants within the same category (e.g. male members age 37 with unknown service were assumed to have the same service distribution as male members age 37 with known service).

VI. RESULTS OF VALUATION

Table 10
Expected Number of Years of Life
Remaining at Specified Ages

Age	Male	Female
		28.0
55	22.7	27.1
56	21.9	26.2
57	21.1	25.3
58	20.3	24.4
59	19.5	
	18.8	23.5
60	18.0	22.6
61	17.3	21.8
62	16.5	20.9
63	15.8	20.1
64		
	15.1	19.2
65	14.4	18.4
66	13.8	17.6
67	13.1	16.8
68	12.5	16.0
69		
	11.9	15.3
70	11.3	14.5
71	10.8	13.8
72	10.3	13.1
73	9.7	12.4
74		
	9.2	11.7
75		

1971 Group Annuity Mortality Table.

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State Employees

The costs for State Employees as of June 30, 1988, including all benefit changes through that date, developed as follows:

Item	Amount	% of Payroll
(1) Participating payroll	\$346,491,500	--
(2) Employer normal cost	19,774,800	5.7072%
(3) Frozen unfunded actuarial liability as of July 1, 1988	430,562,200	--
(4) Interest on unfunded actuarial liability	30,039,000	8.7
(5) Amortization payment	3,651,600	1.1

The funding statute calls for the State to contribute 100 percent of the projected normal cost plus 100 percent of the interest on the unfunded actuarial accrued liability (as of June 30, 1988) plus an amortization payment equal to three times 0.215% of the frozen unfunded liability as of June 30, 1985 plus the increase in liability for changes in liability of more than 1% of the outstanding unfunded liability for the 1989-90 fiscal year. Based on this requirement and a projected participating payroll of \$400,413,000, the 1989-90 employer contribution "rate percent" for State Employees is 14.7 percent of payroll as developed below.

Item	Amount	% of Projected Payroll
(6) Projected 1989-90 participating payroll	\$400,413,000	--
(7) 1989-90 employer normal cost = 5.7072% x (6)	22,852,400	5.7%
(8) Required contribution payable July 1, 1989 = 1.00 x (7) + 1.00 x (4) + 1.00 x (5)	56,543,000	14.1
(9) Required contribution payable monthly = (8) plus interest adjustment	58,663,400	14.7

The calculations, as completed through line 8 on the previous page, assume that the employer contributions will be paid into the retirement fund at the beginning of each fiscal year and will start to earn interest from that date. However, contributions will be deposited monthly so that approximately half a year's interest is lost, and the contribution must be increased to reflect this. Line 9 above reflects this adjustment.

The "rate percent" of 14.7 percent of payroll (shown on line 9) is 1.1 percentage points greater than the previous year. The reasons for the increase are shown in the following chart:

<u>Reason</u>	<u>Effect on Rate Percent</u>
Effect of buyback of service (includes the new provisions which allowed members to purchase prior years of service at a subsidized cost level)	0.9%
Effect of salary increases greater than assumed	0.3
Miscellaneous net actuarial losses (net effect of mortality, terminations, employee data records, etc.)	0.3
Investment gain during 1987-88 fiscal year	<u>(0.4)</u>
Total	1.1%

Teachers

The costs for Teachers as of June 30, 1988, including all benefit changes through that date, developed as follows:

<u>Item</u>	<u>Amount</u>	<u>% of Payroll</u>
(1) Participating payroll	\$368,248,300	--
(2) Employer normal cost	23,922,100	6.4962%
(3) Frozen unfunded actuarial liability as of July 1, 1988	743,227,700	--
(4) Interest on unfunded actuarial liability	51,852,800	14.1
(5) Amortization payment	6,367,500	1.7

Applying the funding statute to the Teachers' costs and a projected participating payroll of \$407,025,000 results in a contribution "rate percent" requirement for fiscal 1989-90 of 21.6 percent. Half of this rate (10.80%) is payable by the State and half by the municipalities. The "rate percent" is developed as follows:

<u>Item</u>	<u>Amount</u>	<u>% of Projected Payroll</u>
(6) Projected 1989-90 participating payroll	\$407,025,000	--
(7) 1989-90 employer normal cost = 6.4962% x (6)	26,441,200	6.5%
(8) Required contribution payable July 1, 1989 = 1.00 x (7) + 1.00 x (4) + 1.00 x (5)	84,661,500	20.8
(9) Required contribution payable monthly = (8) plus interest adjustment	87,836,300	21.6

The calculations, as completed through line 8 above, assume that the employer contributions will be paid into the retirement fund at the beginning of each fiscal year and will start to earn interest from that

contributions will be deposited monthly so that approximately 1/12 of the total annual contribution must be made. However, contributions will be deposited monthly so that approximately 1/12 of the total annual contribution must be made. However, contributions will be deposited monthly so that approximately 1/12 of the total annual contribution must be made.

The "rate percent", measured by line 9 above, is 21.6 percent of payroll or 1.3 percent greater than the 20.3 percent for the previous year. The reasons for this increase are shown in the following chart:

Reason	Effect on Rate Percent
Effect of buyback of service (includes the new provisions which allowed members to purchase prior years of service at a subsidized cost level)	1.7%
Miscellaneous actuarial losses (net effect of mortality, retirement, terminations, employee data records, etc.)	0.2
Investment gain during 1987-88 fiscal year	(0.4)
Total	1.5%

Teacher Survivors

Because data on dependents of teachers is not available, it is not possible to do a thorough analysis of the Teachers Survivor program. However, through the use of assumed ages for members and their spouses and children, we were able to determine that the current assets of \$44.6 million together with the future income will be sufficient to cover the actuarial liabilities of this program. Currently the employee and the employer each contribute one percent of salary up to \$3,600 for a maximum

contribution of \$120 annually. Contributions in recent years on behalf of the approximately 7,700 members and benefit payments have been about approximately \$1 million. For the 1987-88 year, contributions totaled \$1,055,000 and benefit payments were \$1,181,000.

Value of Vested Benefits

The "value of vested benefits" represents the single sum value, based on the Plan's investment return, mortality, and retirement age assumptions, of all benefits to present and former employees who do not have future employment by the employee as a required condition for their receipt. Thus, it includes the present value of an immediate or deferred pension for all pensioners, beneficiaries, and active participants with at least ten years of service. For active employees with less than ten years of service, only the accumulated employee contributions are included.

For the Employees' Retirement System, the value of vested benefits as of June 30, 1988 is as follows:

	State Employees	Teachers
Active members	\$355,599,700	\$ 54,132,100
Inactive members	12,596,700	13,233,500
Retired members	523,517,400	562,328,200
Total value of vested benefits	\$971,713,800	\$1,076,703,800
Assets at actuarial value	689,962,100	759,982,500
Unfunded value of vested benefits	\$281,751,700	\$ 316,721,300

Disclosure Information Required by G.A.S.B. Statement #5

For plan years beginning after December 15, 1986, the Plan is subject to the disclosure requirements of Statement No. 5 of the Governmental Accounting Standards Board (G.A.S.B.).

The Statement requires the calculation of a standardized measure called the "pension benefit obligation" which is independent of the actuarial funding method. This amount is the actuarial present value of credited projected benefits pro-rated on service. It differs from the previously reported "value of vested benefits" because the value of non-vested benefits is included, future salary increases are taken into account and because of the pro-ration of benefits uniformly over an employee's total projected service.

The pension benefit obligation as of June 30, 1988 for State Employees has been determined to be \$1,105,788,400. Approximately 51% of this amount is attributable to benefits on behalf of active employees with the balance (49%) attributable to the benefits of retirees and inactive employees. For Teachers the pension benefit obligation as of June 30, 1988 is \$1,463,376,600. Of this amount approximately 65% is attributable to active employees and the remaining 35% is attributable to benefits on behalf of pensioners, beneficiaries and inactive employees.

Exhibit II of the attached actuarial valuation certificate provides additional detail regarding this new disclosure amount.

Overall Status of System

Legislation in January, 1979 effectively returned the System to its former statutory funding schedule beginning with the 1979-80 fiscal year. (Actually, the accelerated funding provided for by the General Assembly in 1978 was never used as the basis for determining contributions as its effective date was deferred for one year to July 1, 1979, by which date the further revision of the law superseded it.)

As the funding law currently exists, beginning with the fiscal year starting July 1, 1986, the statutory contribution comprises the normal cost, amortization of the June 30, 1985 unfunded liability and certain changes in that liability based on the sum-of-the-digits method over 30 years, and interest on the outstanding balance of the unfunded liability.

We believe that the funding program as set forth in the state statute is a reasonable basis for funding the Rhode Island Retirement System. If the statutory funding program is followed without change, the System will be fully funded--that is, the assets will equal the actuarial liability on June 30, 2016. In the interim, the assets are projected to be sufficient at all times to meet the cash requirements for projected benefit payments.

APPENDIX

MODEL FORM SUMMARY STATEMENT RE CITY AND TOWN PARTICIPATION
IN TEACHERS' RETIREMENT SYSTEM FOR PURPOSES OF
FINANCIAL STATEMENTS AND REPORTS,
MUNICIPAL BOND REGISTRATION STATEMENTS, ETC.

The (city) (town) of _____ provides retirement benefits to its public school teachers through its participation in the Rhode Island Retirement System, a statutory, mandatory, state-wide, multi-employer retirement system, which first covered Rhode Island teachers on July 1, 1949. This System is administered as a unified state-wide system by the State Retirement Board, the composition of which is set forth in the pertinent state statute. The assets are held in the custody of the State Treasurer as an undivided single fund.

The actuarial costs of the retirement benefits are partially funded by employee contributions of 8 1/2 percent of pay effective July 1, 1986. The net employer actuarial costs are determined annually by the actuary and as provided by statute are certified by the Retirement Board to the Department of Administration as a rate percent of payroll, payable one half by the State of Rhode Island and one half by the (city) (town). The statute provided for increasing graduated percentages of the annual normal cost and interest on the unfunded liability until the year beginning July 1, 1986 when the full normal cost and amortization payments on a 30-year schedule are required.

Actuarial valuations prepared by Martin E. Segal Company, applying the entry age normal cost method with the frozen initial liability, assuming 7 1/2 percent interest return on invested assets and applying assumed rates of salary progression, allowance for post-retirement increases and other actuarial assumptions—all as set forth in the published annual reports of the Retirement Board—reveal the following comparative highlights of the last three years for the Teachers' System as a whole:

	Year Beginning July 1,		
	1986	1987	1988
Active participants	9,886	10,307	10,753
Pensioners and beneficiaries	3,261	3,414	3,577
Inactive participants	2,030	2,006	2,121
Liability for accrued vested benefits	\$856,938,500	\$1,002,958,200	\$1,070,703,600
Net assets at actuarial value for 1986, 1987 and 1988	533,018,300	648,705,500	759,982,500

As shown in State's financial statements:

	Year Ended June 30,		
	1986	1987	1988
Employer contributions	\$ 60,405,655	\$ 60,558,867	\$ 58,958,711
Member contributions	24,932,383	27,757,328	34,895,982
Total contributions	\$ 85,338,038	\$ 88,316,194	\$ 93,854,693
Net miscellaneous income	311,202	332,766	1,331,824
Investment income	47,947,261	52,810,779	69,646,982
Total income available for benefit payments	\$133,597,501	\$141,459,740	\$164,833,499
Benefit payments	37,444,543	46,271,415	51,883,396
Excess of income over expenses	\$ 96,152,958	\$ 95,188,325	\$112,950,103

Note: Detail figures may not add to totals shown because of rounding.

Actuarial costs and liabilities, as shown in the summary presentation, are determined in the aggregate for the Teachers System. Accordingly, employer contributions are first determined in the aggregate for all participating employers in this multi-employer system, are then expressed as a rate percent of the aggregate participating payroll; and one half this rate percent is then promulgated to each participating employer as the actuarial cost factor to be applied to its participating payroll (the remaining one half of the employer cost is contributed by the State).

Employer contributions by the (city) (town) of _____ for each of the last two years (together with the amount for the current year, based on the promulgated rate percent of 10.15 percent) are as follows:

	<u>Year Ending June 30,</u>		
	<u>1986</u>	<u>1987</u>	<u>1988 (est.)</u>
Participating payroll			
Employer contributions			

Participating payroll
Employer contributions

With respect to the Teachers Retirement System, Martin E. Segal Company, independent actuaries advising the Retirement Board, have stated on January 26, 1989:

"We believe that the funding program set forth in the state statute is a reasonable basis for funding the Rhode Island Teachers Retirement System. If the statutory funding program is followed without change, the System will be fully funded--that is, the assets will equal the actuarial liability on June 30, 2016. In the interim the assets are projected to be sufficient at all times to meet the cash requirements for projected benefit payments."

According to the statutory funding schedule, the contributions required each year of the (city) (town) of _____ and the State will remain relatively level as a percent of payroll as the System moves toward funding the full actuarial liability. Ultimately, however, because the actuarial funding results in the accumulation of reserves that are invested, the required appropriation will be significantly less than would be required if this System were on a pay-as-you-go basis.

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January 26, 1989

EMPLOYEES' RETIREMENT SYSTEM OF THE STATE OF RHODE ISLAND
CERTIFICATE OF ACTUARIAL VALUATION

This is to certify that we have prepared an actuarial valuation of the plan as of June 30, 1988.

This certificate contains the following attached exhibits:

- EXHIBIT I - Actuarial Cost Development of Fiscal Year 1989-90 Contribution Percentage
 - A. State Employees
 - B. Teachers
- EXHIBIT II - Pension Benefit Obligation
- EXHIBIT III - Actuarial Assumptions and Cost Method
- EXHIBIT IV - Summary of Plan Provisions

To the best of my knowledge, the information supplied in this actuarial valuation is complete and accurate (except as noted in Exhibit I) and in my opinion the assumptions used in the aggregate (a) are reasonably related to the experience of the plan and to reasonable expectations and (b) represent my best estimate of anticipated experience under the plan.

MARTIN E. SEGAL COMPANY, INCORPORATED

By: James R. Laws
James R. Laws, F.S.A., M.A.A.A.
Senior Vice President and Actuary

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EXHIBIT I
ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1989-90 CONTRIBUTION PERCENTAGE

A. STATE EMPLOYEES

The valuation was made with respect to the following data supplied to us by the Retirement Board:

- a. 15,011 active participants (including 7,314 fully vested) with total annual salaries of \$346,491,500
- b. 1,958 inactive participants
- c. 7,023 pensioners (including 528 beneficiaries of deceased pensioners and active employees)

The actuarial factors as of the valuation date are as follows:

1. Actuarial present value of benefits - total	\$1,521,799,600
Active employees	\$975,685,500
Inactive employees	12,596,700
Pensioners and beneficiaries	533,517,400
2. Actuarial value of assets	689,902,100
3. Present value of future employee contributions	223,265,900
4. Unfunded frozen actuarial liability	430,562,200
5. Actuarial present value of future normal costs (item 1 - item 2 - item 3 - item 4)	178,069,400
6. Actuarial present value of future compensation	2,976,879,300
7. Normal cost percentage (item 5 / item 6)	5.98%
8. Total compensation of employees below the assumed retirement age	\$330,682,700
9. Normal cost (item 7 x item 8)	19,774,800
10. Interest on unfunded frozen actuarial liability	30,039,000
11. Payment required to amortize unfunded frozen actuarial liability over 30 years (27 years remaining from July 1, 1989) in installments which increase in multiples of 0.215% per year	3,651,600
12. Total annual cost if paid on July 1, 1988 (item 9 plus item 10 plus item 11)	53,465,400

(Continued...)

EXHIBIT I
ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1989-90 CONTRIBUTION PERCENTAGE

A. STATE EMPLOYEES
(Continued)

- 13. Total annual cost if paid in uniform installments throughout the year (item 12 plus one-half year's interest)
- 14. Total annual cost based on 1989-90 projected participating payroll of \$400,413,000 if paid in uniform installments throughout the year
- 15. Item 14 amount as a percent of payroll

Ratio of actuarial value of assets (line 2) to actuarial accrued liability (\$1,207,258,000): 57.15%

Note: Included are 48 active employees unknown as to age, service, or both.

EXHIBIT I
 ACTUARIAL COST FOR DEVELOPMENT OF
 FISCAL YEAR 1989-90 CONTRIBUTION PERCENTAGE

B. TEACHERS

The valuation was made with respect to the following data supplied to us by the Retirement Board:

- a. 10,753 active participants (including 7,923 fully vested) with total annual salaries of \$368,248,300
- b. 2,121 inactive participants
- c. 3,577 pensioners (including 149 beneficiaries of deceased pensioners and active employees)

The actuarial factors as of the valuation date are as follows:

1. Actuarial present value of benefits - total	\$2,079,509,400
Active employees	\$1,562,937,900
Inactive employees	13,233,500
Pensioners and beneficiaries	503,338,000
2. Actuarial value of assets	759,982,500
3. Present value of future employee contributions	321,093,100
4. Unfunded frozen actuarial liability	743,227,700
5. Actuarial present value of future normal costs (item 1 - item 2 - item 3 - item 4)	255,206,100
6. Actuarial present value of future compensation	3,777,565,700
7. Normal cost percentage (item 5 / item 6)	6.76%
8. Total compensation of employees below the assumed retirement age	\$353,876,900
9. Normal cost (item 7 x item 8)	23,922,100
10. Interest on unfunded frozen actuarial liability	51,852,800
11. Payment required to amortize unfunded frozen actuarial liability over 30 years (27 years remaining from July 1, 1989) in installments which increase in multiples of 0.215% per year	6,367,500
12. Total annual cost if paid on July 1, 1988 (item 9 plus item 10 plus item 11)	82,142,400

(Continued...)

EXHIBIT I
 ACTUARIAL COST FOR DEVELOPMENT OF
 FISCAL YEAR 1989-90 CONTRIBUTION PERCENTAGE

B. TEACHERS
 (Continued)

13. Total annual cost if paid in uniform installments throughout the year (item 12 plus one-half year's interest) \$85,222,700
14. Total annual cost based on 1989-90 projected participating payroll of \$407,025,000 if paid in uniform installments throughout the year 87,836,300
15. Item 14 as a percent of payroll 21.6%

Ratio of actuarial value of assets (line 2) to actuarial accrued liability (\$1,660,351,300): 45.77%

Note: Included are 372 active employees unknown as to age, service, or both.

EXHIBIT 11
PENSION BENEFIT OBLIGATION

The value of the pension benefit obligation required for disclosure by Statement No. 5 of the Governmental Accounting Standards Board is shown below as of June 30, 1988.

	Pension Benefit Obligation	
	State Employees	Teachers
1) Participants currently receiving benefits and terminated employees not yet receiving benefits	\$ 546,114,100	\$ 516,571,500
2) Current employees		
Accumulated employee contributions	143,124,200	217,909,800
Employer-financed vested	212,475,500	336,222,300
Employer-financed nonvested	<u>204,074,600</u>	<u>392,673,000</u>
3) Total pension benefit obligation	\$1,105,788,400	\$1,463,376,600

EXHIBIT 111
ACTUARIAL ASSUMPTIONS AND COST METHOD

Mortality rates -- 1971 Group Annuity Mortality Table

Disability mortality before age 65 -- Age 65 mortality under stipulated table

Termination rates before retirement:

Age	State Employees (Rate %)			
	Death*	Disability	Withdrawal	Total*
20	.05	.06		
25	.06	.09	21.20	21.31
30	.08	.11	15.80	15.95
35	.11	.15	11.60	11.79
40	.16	.22	8.40	8.66
45	.29	.36	6.20	6.58
50	.53	.61	4.20	4.85
55	.85	1.01	2.60	3.73
60	1.31	--	--	1.86
				1.31

15% of the above disability rates are assumed service-connected.

Age	Teachers (Rate %)			
	Death*	Disability	Withdrawal	Total*
20	.05	.06	12.39	12.50
25	.06	.09	9.70	9.85
30	.08	.11	7.50	7.69
35	.11	.15	5.66	5.92
40	.16	.22	4.14	4.52
45	.29	.36	2.75	3.41
50	.53	.61	1.35	2.49
55	.85	1.01	--	1.86
60	1.31	--	--	1.31

15% of the above disability rates are assumed service-connected.

*Rates shown for men; rates for women are slightly lower.

Note: Detail rates may not add to totals shown due to rounding.

Frozen actuarial liability calculated on an individual basis and the outstanding balance of the unfunded amount is based on expected value regardless of actual contributions. It is funded over the 30-year period ended June 30, 2016. Payment on outstanding balance of unfunded frozen initial liability based on sum of (1) interest on outstanding balance, and (2) a payment towards principal. The principal portion of the payment is based on the sum-of-the-digits amortization method.

Age	Present salary as a % of salary at 65	Annual increase (Rate %)
20	11.30	5.85
25	15.00	5.77
30	19.79	5.61
35	25.91	5.41
40	33.52	5.09
45	42.66	4.73
50	53.43	4.45
55	66.26	4.34
60	82.02	4.17

Includes allowance for inflation of 4% per year.

Unknown characteristics of employees; same as those exhibited by employees with known characteristics. Unknown salary is assumed to be \$20,000 for State Employees and \$25,000 for Teachers.

Retirement age -- State Employees: 63, or completion of service requirement, if later. Teachers: 61 1/2, or completion of service requirement, if later.

Post-retirement increases -- 3% compounded annually

Percent married -- Social security awards during 1972

Net investment return -- 7.17%

Actuarial value of assets --

Sum of Preliminary Value and write-up, but no more than 120% of market value or less than 80% of market value. Preliminary Value is actuarial value of assets at beginning of the year plus increase in cost value during the year, excluding realized capital gains or losses. Write-up is 20% of market value at end of year in excess of preliminary value.

If Preliminary Value exceeds market value, there is a write-down of assets determined in a similar manner.

Actuarial cost method -- Frozen Initial Liability method. The method is also referred to as the entry age normal cost method with frozen initial liability.

Entry age is the employee's age at the time he or she would have commenced employment if the plan had always been in existence.

EXHIBIT IV
SUMMARY OF PLAN PROVISIONS

Service pension

	<u>General Employees</u>		<u>Correctional Officers</u>	<u>Legislators</u>	
Age requirement:	60	None	50	55	None
	or			or	
Service requirement:	10 yrs.	30 yrs.	20 yrs.	8 yrs.	20 yrs.

Amount: 1.7% of final average salary up to 10 years of service plus 1.9% per year for the next 10 years of service plus 3% for the next 14 years of service plus 2% for the 35th year. The maximum benefit is 80% of final average salary after 35 years of service. Final average salary is defined as the average of compensation earned during the highest 3 consecutive years prior to termination. Correctional officers receive 2% of final average salary for each of the first 30 years of service plus 6% for the 31st year plus 5% for the 32nd year plus 4% for the 33rd year plus 3% for the 34th year plus 2% for the 35th year. Legislators receive \$600 per year of service to a maximum of \$12,000.

Disability

Non-occupational:

Age requirement: None
Service requirement: 5 years
Amount: Regular pension based on service accrued and final average salary at disability, payable immediately. The minimum retirement percentage is 17% regardless of service.

Occupational:

Age requirement: None
Service requirement: None
Amount: 66 2/3% of final salary, payable immediately.

Vesting

Age requirement: None
Service requirement: 10 years
Amount: Regular pension accrued, payable at age 60.

Pre-retirement death benefits

Lump sum benefit:

Age requirement: None
Service requirement: None
Amount: Sum of (a) \$800 per year of service to a maximum of \$16,000 and with a minimum of \$4,000, and (b) Refund of employee contributions.

Joint and Survivor benefit (applicable only if elected by employee):

Age requirement: None
Service requirement: 10 years / Legislators: 8 years
Amount: Benefit employee would have received had he retired the day before he died and elected the joint and survivor option.

Occupational death benefit:

Age requirement: None
Service requirement: None
Amount: Sum of (a) 50% of salary to spouse or children under age 18, less workmen's compensation, and (b) Refund of employee contributions.

Post-retirement death benefit

Lump sum benefit: Sum of (a) 100% of employee contributions, less benefits paid, and (b) Pre-retirement death benefit, reduced 25% year of retirement, but not less than \$4,000.

Employee contribution rate

<u>Date</u>	<u>State Employees</u>	<u>Teachers</u>	<u>Legislators</u>
Prior to 7/1/79	5%	6%	30%
7/1/79 - 6/30/82	5 1/2	6 1/2	30
7/1/82 - 6/30/85	6	7	30
7/1/85 - 6/30/86	7	8	30
7/1/86 and later	7 1/2	8 1/2	30

Available options

Joint and survivor with 50% or 100% continued to the beneficiary after the death of the employee, Social Security.

Post-retirement cost-of-living increases

3% of current amount, compounded, to pensioners and beneficiaries beginning on the third January 1 following retirement.