

*Report  
of the  
Actuary*

MARTIN E. SEGAL COMPANY  
INCORPORATED

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EMPLOYEES' RETIREMENT SYSTEM  
OF THE STATE OF RHODE ISLAND

ACTUARIAL VALUATION AS OF JUNE 30, 1981

JANUARY 22, 1982

Retirement Board of the Employees'  
Retirement System  
State of Rhode Island  
108 Dyer Street  
Providence, Rhode Island 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, 1981.

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. Joseph G. Jamelli, Executive Director; Mr. John P. Sullivan, Assistant Director; and Mr. Carlo Menocci, Principal 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. EMPLOYER DATA
- III. RETIREE DATA
- IV. RETIREMENT FUND
- V. ACTUARIAL ASSUMPTIONS AND METHODS

Martin E. Segal Company, Inc.  
January, 1982


VI. RESULTS OF VALUATION

- Appendix A - Model Form Summary Statement\*
- Appendix B - Certificate of Actuarial Valuation

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

Sincerely yours,

MARTIN E. SEGAL COMPANY

By   
 Sherman G. Sass  
 Senior Vice President

By   
 Joseph C. Denty, A.S.A.  
 Actuary

\*Appendix A was designed for use by the cities and towns of the State whose public school teachers participate in the Rhode Island Retirement System. It is intended as a model statement which can be incorporated in the notes to the city's or town's financial statements. The statement may also be set forth in any municipal bond registration statement.

Please note that there are blanks to be filled in: the name of your city or town; certain financial data pertaining to your city or town, contributions to the Retirement System, payroll for teachers, etc.

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 5 1/2\* per cent of their annual earnings; Teachers contribute 6 1/2\* per cent.

The System provides unreduced benefits of 1.7 per cent of earnings for the first ten years of service; 1.9 per cent for the next ten years; and 2.4 per cent per year of service over 20 years up to a maximum of 80 per cent of earnings for all years of service. Such benefits are available to members at least age 55 with 30 years of service or age 60 with 10 years of service, or after 35 years at any age. State correctional officers may retire at age 50 if they have 20 years of service, at 2 per cent for each year of service. 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 per cent per year of the original award 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 per cent compounded annually.

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

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

\*These rates are scheduled to increase by 0.5 per cent on July 1, 1982 and again on July 1, 1985.

#### Employee Data

We received data on 16,501 active State Employees and 10,893 Teachers as of June 30, 1981 who were participating in the System. On the average, the State Employees were age 43 and had 8 1/2 years of service; Teachers were age 40 1/2 with 12 1/2 years of service.

#### Retiree Data

We received data on 4,740 State Employee pensioners and 69 beneficiaries as of June 30, 1981. The pensioners' average monthly benefit was \$375. There were 1,901 retired Teachers and 27 beneficiaries; the average benefit was \$764 a month for the pensioners. The benefit amounts include an adjustment for the cost-of-living provision. Of all the pensioners on the rolls, 6 per cent had retired in the year ended June 30, 1981.

#### Retirement Fund

As of June 30, 1981, the assets of the Retirement Fund, including Teachers Survivors Reserves, amounted to \$464 million. These assets are available as an offset to the actuarial liabilities for future benefits.

#### Actuarial Valuation

Our valuation was prepared as of June 30, 1981. Our calculations were based on reasonable assumptions as to expected future experience and are the same as those used in our previous actuarial valuation. We used the "entry age normal" cost method, which spreads the cost of each employee's projected pension as a level percentage of his earnings from date of hire to assumed retirement.

The employer normal cost\* for State Employees is \$13.3 million. This represents 5.5 per cent of the reported payroll of participating State Employees as of June 30, 1981. The employer normal cost for Teachers is \$10.6 million or 4.8 per cent of reported participating payroll.

\*Please refer to the "Actuarial Assumptions and Methods" section of the report for definitions of these terms.

For State Employees, the accrued actuarial liability\* (for benefits earned before July 1, 1981) is \$618 million, of which \$229 million represents the liability to those already receiving pensions. The unfunded accrued actuarial liability at the end of the year is \$376 million. For Teachers, the accrued actuarial liability is \$778 million, of which \$274 million is for those receiving pensions. The unfunded accrued actuarial liability stands at \$579 million.

The value of the System's vested benefits is \$1.12 billion. Thus the assets are short of this amount by \$676 million (excluding assets allocable to the Teachers Survivors program).

For the fiscal year 1982-83, the State's statutory funding schedule, as amended effective July 1, 1979, calls for a contribution of 91 per cent of the State's normal cost and 75 per cent of the interest on the unfunded accrued actuarial liability. This amounts to 11.3 per cent of the projected 1982-83 payroll of \$272 million for State Employees and 14.6 per cent of projected payroll of \$257 million for Teachers. (Half of the cost for Teachers is paid for by the municipalities.) Beginning July 1, 1982 the employee contribution rates will increase by 1/2 per cent. These increases are recognized in the rate per cents above. According to the statute as amended, the percentages of normal cost and interest on the unfunded liability required to be contributed are scheduled to increase until fiscal 1985-86 and then in later years the full normal cost and amortization of unfunded liabilities will be required.

\*See note on page 2.



II. EMPLOYEE DATA

We received data on 16,501 State Employees and 10,893 Teachers participating in the System on June 30, 1981. The data included age, service, and salary for each participant. The average salary of the participants was \$14,500 for State Employees and \$20,400 for Teachers (see NOTE below). The data included 351 Correctional Officers and 135 Legislators.

Tables 1A and 1B give detailed age, service and average salary data on State Employees and Teachers, respectively. In preparing these tables, we assumed an annual salary of \$10,000 for the State Employees for whom earnings were missing, and a \$15,000 annual salary was imputed for Teachers with unknown compensation. NOTE: In addition, based on inspection of sample data, it was determined that reported salaries represented a higher pay period. Accordingly, we adjusted salaries by ratios determined from the sampling process together with other known information.

Tables 2A and 2B summarize certain basic statistics on active State Employees and Teachers and compare them to those of the previous year. During the year, average salary for State Employees increased by 7.4 per cent while Teachers' average salary increased by 15.9 per cent (see NOTE above). Aggregate payroll increased by 10.1 per cent for State Employees and by 12.9 per cent for Teachers.

Overall, the data was in excellent condition. We recommend that the Board continue to pursue its program of storing all basic information on participants on computer files.

Table 1A  
Number and Average Salaries of Employees in Active Service  
As of June 30, 1981  
By Age and By Years of Service  
STATE EMPLOYEES

Age	Total	Years of Service								Unknown
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and over	
<b>Total</b>	16,501 \$14,500	6,331 \$13,000	4,738 \$14,200	2,644 \$15,200	1,180 \$17,100	743 \$18,900	384 \$19,900	203 \$21,100	121 \$21,600	157 \$11,400
Under 20	100 \$10,600	100 \$10,600	--	--	--	--	--	--	--	4 \$11,400
20 - 24	1,215 11,500	1,094 11,500	117 \$11,600	--	--	--	--	--	--	9 13,400
25 - 29	2,172 13,100	1,309 13,200	777 13,000	77 \$12,900	--	--	--	--	--	8 14,200
30 - 34	2,331 15,100	1,048 14,000	889 16,200	365 15,900	21 \$13,700	--	--	--	--	4 18,900
35 - 39	1,563 15,700	628 14,300	476 15,700	318 17,500	123 18,500	14 \$16,300	--	--	--	3 18,700
40 - 44	1,403 15,300	495 13,500	413 14,500	246 16,500	161 19,400	73 18,800	12 \$16,800	--	--	5 14,300
45 - 49	1,589 15,100	495 13,000	464 14,200	294 15,400	139 18,700	121 20,400	54 19,300	\$17,300	--	9 17,300
50 - 54	1,966 15,000	494 12,700	562 13,600	379 14,900	201 17,400	161 20,000	98 19,500	49 19,900	\$16,900	4 19,400
55 - 59	2,176 15,000	423 13,100	560 13,300	541 14,400	250 15,800	195 18,400	102 21,000	71 22,300	20,000	4 19,400
60 - 64	1,422 15,100	167 13,300	384 13,000	319 13,800	217 15,500	138 17,200	88 19,500	54 21,900	51 21,800	4 26,800
65 and over	382 16,400	6 15,700	93 13,500	105 14,100	68 16,000	--	--	--	--	107 9,000
Unknown	182 6,600	72 2,900	3 9,000	--	--	--	--	--	--	--

Table 1B  
 Number and Average Salaries of Employees in Active Service  
 As of June 30, 1981  
 By Age and By Years of Service  
 TEACHERS

Age	Total	Years of Service								
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and over	Unknown
<b>Total</b>	10,893 \$20,400	1,230 \$15,000	3,255 \$19,500	3,466 \$21,200	1,378 \$22,000	853 \$22,800	413 \$24,000	204 \$23,700	78 \$20,800	16 \$18,500
Under 20	2 \$22,200	--	--	--	--	--	--	--	--	2 \$22,200
20 - 24	114 11,600	113 \$11,500	--	--	--	--	--	--	--	1 20,700
25 - 29	984 15,300	497 13,900	477 \$16,700	9 \$14,900	--	--	--	--	--	1 19,700
30 - 34	3,065 19,700	227 15,600	1,772 19,500	1,062 20,900	1 \$20,700	--	--	--	--	3 19,700
35 - 39	2,030 21,000	142 16,700	418 20,400	1,152 21,500	314 21,700	1 \$20,500	--	--	--	3 19,500
40 - 44	1,310 21,600	99 17,900	226 20,700	392 21,500	444 22,600	149 22,900	--	--	--	--
45 - 49	1,003 22,100	40 18,800	143 21,200	285 21,100	182 22,500	276 23,300	77 \$23,400	--	--	--
50 - 54	1,015 22,200	32 19,500	126 20,800	285 21,400	160 21,700	191 22,900	155 24,900	64 \$22,800	2 \$ 6,100	--
55 - 59	773 22,200	14 17,200	68 21,400	184 20,900	146 21,500	126 22,500	124 24,300	92 24,000	19 23,100	--
60 - 64	413 21,600	4 24,600	20 19,700	79 20,900	108 21,100	89 21,900	38 21,700	36 24,800	39 21,600	--
65 and over	96 21,000	-- --	3 21,300	14 21,000	22 20,200	21 20,500	19 20,500	12 22,700	5 24,400	--
Unknown	88 14,200	62 13,400	2 19,900	4 15,900	1 21,500	--	--	--	13 15,800	6 15,600

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Table 2A  
 Statistical Data on Active State Employees  
 On June 30, 1981 and 1980

	June 30, 1981	June 30, 1980
Number of covered employees	16,501	16,104
Total annual salary	\$240,040,100	\$218,021,200
Average annual salary	\$14,500	\$13,500
Average age	43	43
Average years of service	8½	8½
Number eligible for service retirement	1,330	1,262
Number vested but not eligible to retire	3,945	3,741

See note in text on salary data  
 RHODE ISLAND ERS

Table 2B  
 Statistical Data on Active Teachers  
 On June 30, 1981 and 1980

	June 30, 1981	June 30, 1980
Number of covered employees	10,893	11,177
Total annual salary	\$221,684,500	\$196,305,300
Average annual salary	\$20,400	\$17,600
Average age	40½	40
Average years of service	12½	12
Number eligible for service retirement	659	638
Number vested but not eligible to retire	5,733	5,178

See note in text on salary data  
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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 group:

	<u>State Employees</u>	<u>Teachers</u>
Pensioners:		
Number	4,740	2,901
Average age	70½	72½
Average monthly benefit	\$375	\$764
Beneficiaries:		
Number	69	27
Average age	74½	79
Average monthly benefit	\$430	\$537

Table 3A gives distributions of the 357 new State Employee pensions in the current year by type of pension and amount. Table 4A does the same for age at retirement. Tables 3B and 4B are similar for the 120 new Teacher pensions.

Tables 5A and 5B give distributions for all pensions in force at the end of the fiscal year by type and amount. Tables 6A and 6B do the same by age.

Overall, the data on retirees was quite good. A minor problem, which has no impact on cost, is that all beneficiaries may not be classified as such.

The data on terminated employees with vested rights to a deferred benefit did not include enough information to calculate the total cost for them. We did, however, for the first time, include a cost equal to their accumulated employee contributions. We again recommend that information regarding terminated vested employees be maintained by the System so that it can be incorporated in future valuations.



Table 3A  
Pensions Awarded in the Year Ended June 30, 1981  
By Type and By Monthly Amount

STATE EMPLOYEES

Monthly Amount	Total	Type of Pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
<b>Total</b>	<b>357</b>	<b>303</b>	<b>30</b>	<b>7</b>	<b>9</b>	<b>8</b>
<b>Under \$50</b>						
\$ 50 - \$ 99	1	1	--	--	--	--
100 - 149	12	12	--	--	--	--
150 - 199	33	22	--	--	--	--
200 - 249	45	43	7	--	--	--
	37	26	2	3	--	--
			8	--	--	1
250 - 299	28	24	--	--	1	--
300 - 349	28	21	1	1	--	2
350 - 399	26	23	4	1	1	1
400 - 449	19	18	--	1	1	2
450 - 499	19	18	1	--	2	--
			--	--	--	--
500 - 599	19	13	--	--	--	--
600 - 699	23	17	1	--	--	1
700 - 799	17	15	4	--	4	--
800 - 899	5	5	2	2	--	1
900 - 999	4	4	--	--	--	--
			--	--	--	--
1,000 - 1,099	5	5	--	--	--	--
1,100 - 1,199	9	9	--	--	--	--
1,200 - 1,299	7	7	--	--	--	--
1,300 - 1,399	4	4	--	--	--	--
1,400 - 1,499	2	2	--	--	--	--
			--	--	--	--
1,500 - 1,999	10	10	--	--	--	--
2,000 - 2,499	1	1	--	--	--	--
2,500 - 2,999	3	3	--	--	--	--

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Table 3B

Pensions Awarded in the Year Ended June 30, 1981  
By Type and By Monthly Amount

TEACHERS

Monthly Amount	Total	Type of Pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
<b>Total</b>	<b>120</b>	<b>109</b>	<b>8</b>	<b>1</b>	<b>2</b>
<b>\$ 50 - \$ 99</b>					
\$ 50 - \$ 99	2	2	--	--	--
100 - 149	3	3	--	--	--
150 - 199	1	1	--	--	--
200 - 249	2	2	--	--	--
250 - 299	4	3	1	--	--
300 - 349	7	6	1	--	--
350 - 399	3	2	1	--	--
400 - 449	1	1	--	--	--
450 - 499	3	3	--	--	--
500 - 599	11	11	--	--	--
600 - 699	9	6	2	--	1
700 - 799	11	11	--	--	--
800 - 899	11	10	1	--	1
900 - 999	16	14	1	--	--
1,000 - 1,099	7	6	1	--	--
1,100 - 1,199	6	5	--	1	--
1,200 - 1,299	12	12	--	--	--
1,300 - 1,399	2	2	--	--	--
1,400 - 1,499	2	2	--	--	--
1,500 - 1,999	6	6	--	--	--
2,500 - 2,999	1	1	--	--	--

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Table 4A

Pensions Awarded in the Year Ended June 30, 1981  
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	357	303	30	7	9	8
30 - 34	1	--	--	1	--	--
40 - 44	2	--	2	--	--	--
45 - 49	2	--	1	1	--	--
50	1	--	--	1	--	--
51	2	--	--	--	1	1
52	2	1	1	--	--	--
53	6	--	4	1	--	1
54	4	1	3	--	--	--
55	10	6	1	1	2	--
56	9	4	4	--	1	--
57	2	1	--	--	--	1
58	8	4	4	--	--	--
59	7	3	3	1	--	--
60	39	38	--	--	1	--
61	19	18	--	--	1	--
62	50	45	3	--	--	2
63	20	18	--	--	1	1
64	29	28	--	--	--	1
65	55	51	3	1	--	--
66	21	21	--	--	--	--
67	15	15	--	--	--	--
68	10	9	1	--	--	--
69	13	12	--	--	1	--
70 and over	30	28	--	--	1	1

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Table 4B

Pensions Awarded in the Year Ended June 30, 1981  
By Type and By Age on Effective Date

## TEACHERS

Age on Effective Date	Total	Type of Pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	120	109	8	1	2
52	1	--	--	--	1
53	3	1	1	1	--
54	4	1	3	--	--
55	7	5	1	--	1
57	2	2	--	--	--
58	5	3	2	--	--
59	2	2	--	--	--
60	23	23	--	--	--
61	11	10	1	--	--
62	22	22	--	--	--
63	8	8	--	--	--
64	4	4	--	--	--
65	7	7	--	--	--
66	7	7	--	--	--
67	2	2	--	--	--
68	3	3	--	--	--
69	3	3	--	--	--
70 and over	6	6	--	--	--

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Table 5A

Pensions in Force on June 30, 1981  
By Type and By Monthly Amount

## STATE EMPLOYEES

Monthly Amount	Total	Type of Pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	4,809	4,156	374	84	126	69
Under \$50	56	45	1	9	--	1
\$ 50 - \$ 99	358	320	27	9	--	2
100 - 149	753	696	45	10	--	2
150 - 199	652	545	99	5	--	3
200 - 249	539	432	82	8	6	11
250 - 299	387	319	32	5	22	9
300 - 349	305	257	28	1	13	6
350 - 399	246	212	11	5	13	5
400 - 449	214	187	10	6	8	3
450 - 499	172	130	10	8	18	6
500 - 599	320	266	9	5	33	7
600 - 699	191	161	11	7	8	4
700 - 799	147	131	7	4	2	3
800 - 899	91	86	--	1	2	2
900 - 999	76	71	1	1	1	2
1,000 - 1,099	62	61	--	--	--	1
1,100 - 1,199	55	53	1	--	--	1
1,200 - 1,299	43	42	--	--	--	1
1,300 - 1,399	30	30	--	--	--	--
1,400 - 1,499	25	25	--	--	--	--
1,500 - 1,999	66	66	--	--	--	--
2,000 - 2,499	14	14	--	--	--	--
2,500 - 2,999	6	6	--	--	--	--
3,000 - 3,499	1	1	--	--	--	--

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Table 5B

Pensions in Force on June 30, 1981  
By Type and By Monthly Amount

## TEACHERS

Monthly Amount	Total	Type of Pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	2,928	2,798	90	13	27
Under \$50	2	2	--	--	--
\$ 50 - \$ 99	8	8	--	--	--
100 - 149	19	19	--	--	--
150 - 199	43	42	1	--	1
200 - 249	59	56	2	--	6
250 - 299	80	69	5	--	3
300 - 349	107	92	12	--	1
350 - 399	112	101	10	--	--
400 - 449	102	88	14	--	2
450 - 499	110	101	7	--	6
500 - 599	261	242	12	1	2
600 - 699	347	334	11	--	2
700 - 799	418	411	4	1	--
800 - 899	363	356	7	5	2
900 - 999	289	278	4	--	1
1,000 - 1,099	224	218	1	4	--
1,100 - 1,199	125	123	--	2	1
1,200 - 1,299	111	110	--	--	--
1,300 - 1,399	53	53	--	--	--
1,400 - 1,499	29	29	--	--	--
1,500 - 1,999	56	56	--	--	--
2,000 - 2,499	8	8	--	--	--
2,500 - 2,999	1	1	--	--	--
3,000 - 3,499	1	1	--	--	--

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Table 6A  
Pensions in Force on June 30, 1981  
By Type and By Age  
STATE EMPLOYEES

Age On June 30, 1981	Total	Type of Pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	4,809	4,156	374	84	126	69
25 - 29	2	--	2	--	--	--
30 - 34	5	--	3	1	--	--
35 - 39	8	--	4	4	--	1
40 - 44	7	--	4	2	1	--
45 - 49	25	3	11	8	2	1
50 - 54	72	11	42	12	3	4
55 - 59	184	72	73	13	20	6
60 - 64	723	575	106	15	21	6
65 - 69	1,324	1,193	76	15	32	6
70 - 74	1,207	1,138	40	11	13	5
75 - 79	718	682	10	3	17	6
80 - 84	342	312	2	--	12	16
85 - 89	140	127	--	--	3	10
90 - 94	43	38	--	--	2	3
95 - 99	6	4	--	--	--	2
100 - 104	2	1	1	--	--	--
105 - 109	1	--	--	--	--	1

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Table 6B  
Pensions in Force on June 30, 1981  
By Type and By Age

TEACHERS

Age on June 30, 1981	Total	Type of Pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	2,928	2,798	90	13	27
35 - 39	4	--	3	1	--
40 - 44	2	1	--	1	--
45 - 49	6	1	5	--	--
50 - 54	14	3	7	3	1
55 - 59	78	56	20	1	1
60 - 64	407	383	19	5	--
65 - 69	576	562	11	2	1
70 - 74	804	790	11	--	3
75 - 79	546	533	5	--	8
80 - 84	280	269	6	--	5
85 - 89	148	139	3	--	6
90 - 94	52	50	--	--	2
95 - 99	9	9	--	--	--
100 - 104	2	2	--	--	--

RHODE ISLAND ERS

IV. RETIREMENT FUND

The State maintains the Employees' Retirement Fund. The Retirement Board provided us with financial statements as of June 30, 1981.

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 gives a summary of income and expenditures for the years ended June 30, 1981 and 1980.

At June 30, 1981 assets totalled approximately \$464 million. Table 8 shows the composition of the assets and compares them to those of the previous year. About 76 per cent of the fund was invested in fixed income securities such as bonds and notes.

The financial statements indicate that 52 per cent of the assets relate to State Employees, 43 per cent are for Teachers, and 5 per cent relate to Teachers Survivors benefits. There is also a small unallocated reserve for unclaimed benefits. Table 9 shows the allocation of assets in detail for 1981 and 1980.

Table 7  
Summary Statement of Income and Expenses  
For the Years Ended June 30, 1981 and 1980

	<u>1981</u>	<u>1980</u>
Employer contributions	\$43,856,481	\$36,223,195
Member contributions	<u>28,023,891</u>	<u>26,057,643</u>
Total contributions	\$71,880,371	\$62,280,838
Less: Administration expenses	--	<u>200</u>
Net contribution income	\$71,880,371	\$62,280,638
Net miscellaneous items	154,382	148,418
Investment income:		
Dividends	\$ 6,855,415	\$ 5,954,361
Interest	31,707,401	25,858,886
Capital gains and losses	<u>1,052,387</u>	<u>259,866</u>
Net investment income	<u>39,615,203</u>	<u>32,073,113</u>
Total income available for benefit payments	\$111,649,956	\$94,502,169
Benefit payments:		
Pension benefits	\$44,848,637	\$41,087,642
Death benefits	1,086,856	1,047,519
Contribution refunds	<u>3,071,930</u>	<u>3,097,948</u>
Total benefit payments	<u>49,017,423</u>	<u>45,233,108</u>
Excess of income over expenses	<u>\$ 62,632,533</u>	<u>\$49,269,061</u>

Note: Detail figures may not add to totals due to rounding.



Table 8  
Assets as of June 30, 1981 and 1980

	<u>1981</u>	<u>1980</u>
Cash	\$ (2,372,007)	\$ 1,468,027
Accrued interest receivable	6,610,655	5,483,287
Investments		
Government bonds	\$153,282,442	\$108,730,135
Corporate bonds	130,536,867	131,983,200
Common and preferred stocks	105,236,539	93,568,042
Certificates of deposit and repurchase agreements	41,900,000	10,625,000
Commercial paper	32,818,686	52,306,812
(Less) Unamortized premiums and discounts	<u>(4,489,831)</u>	<u>(3,273,685)</u>
Total assets	<u>\$463,523,352</u>	<u>\$400,890,819</u>

Note: Detail figures may not add to totals due to rounding.

RHODE ISLAND ERS

Table 9  
Allocation of Assets by Plan  
as of June 30, 1981 and 1980

	<u>1981</u>	<u>1980</u>
State Employees:		
Employer reserves	\$167,585,727	\$144,085,002
Member reserves	<u>74,855,754</u>	<u>66,864,733</u>
Total State Employees reserves	\$242,441,481	\$210,949,735
Teachers:		
Employer reserves	\$ 95,334,380	\$ 78,286,448
Member reserves	<u>103,586,726</u>	<u>91,956,429</u>
Total Teacher reserves	198,921,106	170,242,877
Teachers Survivors:		
Employer reserves	\$ 16,161,641	\$ 14,131,256
Member reserves	<u>5,923,105</u>	<u>5,495,659</u>
Total Teachers Survivors reserves	22,084,746	19,626,915
Unallocated:		
Unclaimed benefit reserve	<u>76,019</u>	<u>71,292</u>
Total assets	<u>\$463,523,352</u>	<u>\$400,890,819</u>

## V. ACTUARIAL ASSUMPTIONS AND METHODS

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 relationship between employer pension contributions and the employee services that give rise to the pension obligation. The result is an employer contribution which anticipates future payments. A fund accumulates which earns investment income, thus reducing the ultimate cost.

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, are, 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. These assumptions are the same as those used in the June 30, 1980 study.

### Mortality Rates

We assumed that mortality rates would conform with the 1971 Group Annuity Mortality Table. This is the most commonly used table of pension plan mortality, and we believe it is a reasonable basis for estimating experience under the System. Table 10 gives some life expectancies determined from this table.

### 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 understate the System's cost. Accordingly, we use

a salary projection to anticipate future increases in earnings. Additionally, it is appropriate to compute pension normal costs which are level as a percentage of payroll rather than level as a dollar amount, 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 per cent of his pay when he is young and a lower per cent of his higher salary at a later age. By the use of a salary projection, the contribution for an individual, all other things remaining the same, tends to stay at the same percentage over the years.

How to project future salaries is a major policy question. To what extent should one seek to anticipate, through present contributions, the full impact on pension costs of future salary changes?

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

<u>Age</u>	<u>Present Salary as a % of Age 65 Salary</u>	<u>Annual Increases (Rate %)</u>
20	17.45	4.84
25	22.07	4.75
30	27.76	4.59
35	34.62	4.39
40	42.68	4.08
45	51.76	3.72
50	61.77	3.45
55	72.98	3.33
60	86.08	3.16

As will appear, 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.

### 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.

We assumed that terminations each year from all causes would be as follows:

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

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

<u>Age</u>	<u>Death*</u>	<u>Teachers (Rate %)</u>		<u>Total*</u>
		<u>Disability</u>	<u>Withdrawal</u>	
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 service-connected.

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

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

### Retirement Ages

The System provides unreduced benefits as early as age 55 for general employees and age 50 for State Correctional Officers. We have assumed State Employees will retire at age 64, or upon the completion of ten years of service if later. Teacher retirements are assumed to occur when the teacher has attained age 63 and has 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 calculation assumed 3 per cent annual benefit increases as provided by Statute. Cost-of-living increases are now "compounded" from year to year. With this valuation we took into account the first two adjustments effective January 1, 1981 and 1982.

### Investment Return

Investment return has a major effect on the ultimate cost of a retirement system. In general, if a system is actuarially funded (so that it has a substantial reserve which is earning an investment yield), a yield of 6 per cent - in contrast to a 5 per cent yield - could reduce annual costs by 16-20 per cent.

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

We selected an investment return assumption of 6 1/2 per cent per year for our calculation. This assumption takes account of probable moderate long-term inflation but is not tied directly to the higher rates currently available.

Actuarial Cost Method

We have used the "entry age normal" actuarial cost method. This method spreads the cost of the benefits to be provided to an individual as a level percentage of his pay from his date of employment to his assumed date of retirement. The normal cost for the entire system is equal to the sum of the normal costs for all participants. In a rough sense, it can be visualized as the cost of benefits earned during the current year.

The accrued actuarial liability represents the amount by which the future normal costs fall short of meeting the cost of future benefit payments. It can also be viewed, roughly, as the value of benefits accrued for service prior to the valuation date.

Overall Actuarial Basis

We believe that our 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. In all cases, we assumed such individuals had the same characteristics as other participants, taking into account the known characteristics (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).

Table 10

Expected Number of Years of Life  
Remaining at Specified Ages

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

1971 Group Annuity Mortality Table.



VI. RESULTS OF VALUATION

State Employees

The costs for State Employees as of June 30, 1981, developed as follows:

<u>Item</u>	<u>Amount</u>	<u>% of Payroll</u>
(1) Participating payroll	\$240,040,100	--
(2) Employer normal cost	13,317,700	5.5%
(3) Unfunded actuarial liability	375,770,400	--
(4) Interest on unfunded actuarial liability	22,934,400	9.6
(5) Total annual cost if paid July 1, 1981 -- Interest only = (2) + (4)	36,252,100	15.1
(6) Total annual cost if paid monthly = (5) plus 1/2 year interest -- Interest only	37,430,300	15.6

The funding statute calls for the State to contribute 91 per cent of the projected normal cost plus 75 per cent of the interest on the unfunded accrued actuarial liability (as of June 30, 1981) for the 1982-83 fiscal year. Based on this requirement and a projected participating payroll of \$271,956,700, the 1982-83 employer contribution "rate per cent" for State Employees is 11.3 per cent of payroll, developed below. Note that for this development, the employee contribution rate of 6 per cent, which becomes effective July 1, 1982, has been employed.

<u>Item</u>	<u>Amount</u>	<u>% of Projected Payroll</u>
(7) Projected 1982-83 participating payroll	\$271,956,700	--
(8) 1982-83 employer normal cost = 5.0481% x (7)	13,728,600	5.0%
(9) Required contribution if paid July 1, 1981 = .91 x (8) + .75 x (4)	29,693,800	10.9
(10) Required contribution if paid monthly = (9) plus 1/2 year interest	30,658,800	11.3

The calculations as completed assume that the employer contribution will be paid into the retirement fund at the beginning of each year, and will start to earn interest from that date. In fact, the money is deposited monthly. Thus about half a year's interest is lost, and the contribution must be increased to reflect this. Lines 6 and 10, on the previous page, include this adjustment.

The "full cost" of the System's benefits (Line 6) is 15.6 per cent of payroll, the same as for the previous year.

Teachers

The costs for Teachers as of June 30, 1981 developed as follows:

<u>Item</u>	<u>Amount</u>	<u>% of Payroll</u>
(1) Participating payroll	\$221,684,500	--
(2) Employer normal cost	10,561,300	4.8%
(3) Unfunded actuarial liability	578,625,300	--
(4) Interest on unfunded actuarial liability	35,315,200	15.9
(5) Total annual cost if paid July 1, 1981 -- Interest only = (2) + (4)	45,876,500	20.7
(6) Total annual cost if paid January, 1982 = (5) plus 1/2 year interest -- Interest only	47,367,500	21.4

Applying the funding statute to the Teachers' costs and a projected participating payroll of \$257,412,300 gives a contribution "rate per cent" requirement for fiscal 1982-83 of 14.6 per cent. Half of this rate (7.3%) is payable by the State and half by the municipalities. The "rate per cent" is developed below. Note that the increase in the employee contribution rate from 6 1/2 per cent to 7 per cent, effective July 1, 1982, has been employed in the following.

<u>Item</u>	<u>Amount</u>	<u>% of Participating Payroll</u>
(7) Projected 1982-83 participating payroll	\$257,412,300	--
(8) 1982-83 employer normal cost = 4.2641% x (7)	10,976,300	4.3%
(9) Required contribution if paid July 1, 1982 = .91 x (8) + .75 x (4)	36,474,800	14.2
(10) Required contribution if paid January, 1982 = (9) plus ½ year interest	37,660,200	14.6

The calculations as completed assume that the employer contribution will be paid into the retirement fund at the beginning of each year and will start to earn interest from that date. In fact, the money is deposited in January. Thus about half a year's interest is lost, and the contribution must be increased to reflect this. Lines 6 and 10, above, include this adjustment.

The "full cost" is 21.4 per cent of payroll which compares to 21.7 per cent for the previous year.

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.

#### Teachers Survivors

Because we do not have data on dependents of teachers, it is difficult to do an analysis of the Teachers Survivor program. However, in the past we attempted to estimate the actuarial position based on "high cost" assumptions. For example, we assumed 25 per cent of teachers would be unmarried at death in active service, 10 per cent would be married but childless, and 65 per cent would be married with children (two children, one born when the wife was age 23 and the other at age 32). On this rough basis, the assets

appear to be sufficient to fully cover the actuarial liabilities. The normal cost is estimated to be between \$110 and \$125 per person—well within the \$192 combined annual employer-employee contribution (each pays 1 per cent of the first \$9,600 of salary).

Based on this analysis, we believe the present contribution is adequate to support the plan of benefits.

#### Value of Vested Benefits

In private pension plans, it is customary for the actuary to provide the "value of vested benefits." This figure is used by accountants in preparing financial statements, both as a disclosure item and as a factor in determining the provision for pension expense, in accordance with Opinion No. 8 of the Accounting Principles Board of the American Institute of Certified Public Accountants, "Accounting for the Cost of Pension Plans." While we recognize that the State may not be covered by this Opinion, a brief discussion of this subject may be helpful.

The "value of vested benefits" represents the single sum value under the plan's investment income and mortality assumptions of all benefits to present and former employees which 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 and inactive vested employees, only the accumulated employee contributions are included.

For the Employees' Retirement System, the value of vested benefits as of June 30, 1981 is as follows:

	<u>State Employees</u>	<u>Teachers</u>
Active members	\$296,583,400	\$310,865,800
Inactive members	3,503,900	3,579,100
Retired members	<u>229,307,500</u>	<u>273,732,200</u>
Total value of vested benefits	\$529,394,800	\$588,177,100
Assets	<u>242,441,500</u>	<u>198,921,100</u>
Unfunded value of vested benefits	<u>\$286,953,300</u>	<u>\$389,256,000</u>



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.)

Under the funding law as amended, the State and the Teacher Employers will not begin to pay the full normal cost and the amortization payment until the fiscal year beginning July 1, 1986. Thus, for fiscal 1982-83, as reported earlier, the employer cost is 91 per cent of the normal cost and 75 per cent of the interest payment on the unfunded accrued actuarial liability. The scheduled percentages are:

<u>Fiscal year beginning on July 1</u>	<u>Normal cost</u>	<u>Interest on unfunded liability</u>
1982	91%	75%
1983	95%	85%
1984	100% and thereafter	95%
1985		100% and thereafter

Beginning with the fiscal year starting July 1, 1986, the statutory contribution will comprise the normal cost, amortization of the June 30, 1985 unfunded liability based on the sum-of-the-digits method over 30 years, and interest on the unfunded accrued liability.

\* \* \* \* \*

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 6 1/2 per cent of pay increasing to 7 per cent July 1, 1982 and 7 1/2 per cent July 1, 1985. 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 per cent of payroll, payable one half by the State of Rhode Island and one half by the (city) (town). The statute provides 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. For the year beginning July 1, 1982, 91 per cent of the normal cost and 75 per cent of the interest on the unfunded liability are the required levels of actuarial funding.

Actuarial valuations prepared by Martin E. Segal Company, applying the entry age normal cost method, assuming 6 1/2 per cent 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,		
	<u>1979</u>	<u>1980</u>	<u>1981</u>
Active participants	11,520	11,177	10,893
Pensioners and beneficiaries	2,777	2,885	2,928
Inactive participants*	N.A.	N.A.	1,496
Liability for accrued vested benefits	\$447,948,900	\$532,210,000	\$588,177,100
Net Assets	149,382,500	170,242,900	198,921,100

\*First included in 1981

	Year Ended June 30,		
	<u>1979</u>	<u>1980</u>	<u>1981</u>
Employer contributions	\$14,700,482	\$18,858,156	\$23,601,692
Member contributions	<u>11,919,233</u>	<u>13,298,198</u>	<u>14,614,575</u>
Total contributions	\$26,619,715	\$32,156,354	\$38,216,267
Net miscellaneous income	43,271	51,994	29,122
Investment income	<u>10,476,833</u>	<u>13,625,215</u>	<u>16,919,653</u>
Total income available for benefit payments	\$37,139,819	\$45,833,563	\$55,165,043
Benefit payments	<u>23,007,144</u>	<u>24,973,191</u>	<u>26,486,814</u>
Excess of income over expenses	<u>\$14,132,675</u>	<u>\$20,860,372</u>	<u>\$28,678,229</u>

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 per cent of the aggregate participating payroll; and one half this rate per cent 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 three years (together with the amount for the current year, based on the promulgated rate percent of 6.6 per cent) are as follows:

	Year Ending June 30,			
	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982 (est)</u>
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 22, 1982:

"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 increase as the System moves toward the funding of the full annual cost. 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.



MARTIN E. SEGAL COMPANY  
INCORPORATED

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TORONTO

January 22, 1982

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, 1981.

The certificate contains the following attached exhibits:

EXHIBIT I - Actuarial Cost for Year Beginning July 1, 1981

A. State Employees

B. Teachers

EXHIBIT II - Actuarial Assumptions and Cost Method

EXHIBIT III - 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

*Joseph C. Demty*

By: Joseph C. Demty, A.S.A.  
Actuary

EXHIBIT I

ACTUARIAL COST FOR YEAR BEGINNING JULY 1, 1981

A. STATE EMPLOYEES

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

- a. 16,501 active participants (including 5,275 fully vested) with total annual salaries of \$240,040,100
- b. 1,712 inactive participants
- c. 4,809 pensioners (including 69 beneficiaries of deceased pensioners and active employees)

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

1. Total normal cost .....	\$ 26,519,900
2. Projected employee contributions .....	13,202,200
3. Employer normal cost .....	13,317,700
4. Actuarial liability - total .....	618,211,900
Active employees .....	\$385,400,500
Inactive employees .....	3,503,900
Pensioners (including beneficiaries of deceased pensioners and active employees) .....	229,307,500
5. Assets .....	242,441,500
6. Unfunded actuarial liability .....	375,770,400

Liability for accrued vested benefits: \$529,394,800

Note: Included are 232 active employees unknown as to age, service, or both. Status of beneficiaries was unclear. The liability included for inactive employees is the sum of their accumulated contributions.

EXHIBIT I  
 ACTUARIAL COST FOR YEAR BEGINNING JULY 1, 1981  
 B. TEACHERS

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

- a. 10,893 active participants (including 6,392 fully vested) with total annual salaries of \$221,684,500
- b. 1,496 inactive participants
- c. 2,928 pensioners (including 27 beneficiaries of deceased pensioners and active employees)

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

1. Total normal cost .....	\$ 24,970,800
2. Projected employee contribution .....	14,409,500
3. Employer normal cost .....	10,561,300
4. Actuarial liability - total .....	777,546,400
Active employees .....	\$500,235,100
Inactive employees .....	3,579,100
Pensioners (including beneficiaries of deceased pensioners and active employees) .....	273,732,200
5. Assets .....	198,921,100
6. Unfunded actuarial liability .....	578,625,300

Liability for accrued vested benefits: \$588,177,100

Note: Included are 98 active employees unknown as to age, service, or both. Status of beneficiaries was unclear. The liability included for inactive employees is the sum of their accumulated contributions.

EXHIBIT II

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:

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

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

<u>Teachers (Rate %)</u>				
<u>Age</u>	<u>Death*</u>	<u>Disability</u>	<u>Withdrawal</u>	<u>Total*</u>
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 service-connected.

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

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

## Salary scale:

Age	Present salary as a percent of salary at 65	Annual increase (Rate %)
17	17.45	4.84
20	22.07	4.75
25	27.76	4.59
30	34.62	4.39
35	42.68	4.08
40	51.76	3.72
45	61.77	3.45
50	72.98	3.33
55	86.08	3.16
60		

Includes allowance for inflation of 3% per year

Unknown characteristics of employees: Same as those exhibited by employees with known characteristics. Unknown salary is assumed to be \$10,000 for State Employees and \$15,000 for Teachers.  
 Retirement age -- State Employees: 64, or completion of service requirement if later. Teachers: 63, or completion of service requirement if later.  
 Post-retirement increases -- 3% compounded annually  
 Percent married -- Social Security awards during 1972  
 Net investment return -- 6%  
 Valuation of assets -- At amortized book value for bonds and at cost for stocks  
 Actuarial cost method -- Entry age normal cost

## EXHIBIT III

## SUMMARY OF PLAN PROVISIONS

Service pension

	General Employees			Correctional Officers	Legislators	
Age requirement:	60	55	None	50	55	None
Service requirement:	10 yrs.	30 yrs.	35 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 2.4% for each additional year of service to a maximum of 80%. 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 per year of service. Legislators receive \$300 per year of service to a maximum of \$6,000. Retirement is mandatory at age 70 except for elected officials. For correctional officers, mandatory retirement is the later of age 55 and the completion of 20 years of service.

Early retirement

Age requirement: None  
 Service requirement: 30 years  
 Amount: Regular pension accrued, reduced by 6% for each year of age less than 55.

DisabilityNon-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.

Testing

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

Pre-retirement death benefits

Jump sum benefit:

Age requirement: None  
Service requirement: None  
Amount: (a) \$400 per year of service to a maximum of \$8,000 and with a minimum of \$2,000.  
(b) Refund of employee contributions.

Spouse's benefit (applicable only if elected by employee):

Age requirement: 60 or 50 Legislators: none  
Service requirement: 10 yrs. 20 yrs. 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: (a) 50% of salary to spouse or children under age 18, less workmen's compensation.  
(b) Refund of employee contributions.

Post-retirement death benefit

Jump sum benefit:

(a) 100% of employee contributions, less benefits paid.  
(b) Pre-retirement death benefit, reduced 25% per year of retirement, but not less than \$2,000.

Employee contribution rate:

Date	State Employees	Teachers	Legislators
Before 7/1/79	5%	6%	30%
7/1/79 - 6/30/82	5%	6%	30
7/1/82 - 6/30/85	6%	7%	30
7/1/85 and later	6%	7%	30

Available options:

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

Post-retirement cost-of-living increases:

3% of current amount, compounded, to pensioners and beneficiaries following the third anniversary of retirement.