

EMPLOYEES' RETIREMENT SYSTEM
OF THE STATE OF RHODE ISLAND

Actuarial Valuation as of
June 30, 1989

MARTIN E. SEGAL COMPANY

CONSULTANTS AND ACTUARIES

607 BOYLSTON STREET
BOSTON, MA 02116
(617) 262-0550
FAX (617) 262-0097

April 24, 1990

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, 1989.

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 Capizano, 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

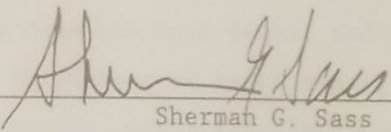
State of Rhode Island
April 24, 1990
Page Two

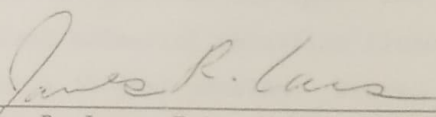
Appended to this report is our actuarial certificate detailing the cost factors, assumptions, and plan of benefits used for the valuation.

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, E.A., F.S.A., M.A.A.A.
Senior Vice President and Actuary

SGS/JRL/dg

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 7-3/4* 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 28 years at any age. The 28-year pension reflects a change since our last actuarial valuation (June 30, 1988) -- at that time, the System provided for a 30-year pension. 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.

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

* Of the 7-3/4 percent contribution by State employees, 1/4 percent reflects the amount required to provide for post-retirement health benefits.

Early Retirement Window of 1989

During 1989, approximately 750 State employees took the early retirement incentive which was offered. The provision allowed employees with 25 or more years of service or, if over age 60, 10 or more years of service to retire and receive a 10% increase in their benefit service. Employees electing the incentive were required to retire before July 29, 1989. Since the window period for electing the incentive took place after the current valuation date (June 30, 1989), the cost impact is not reflected in this valuation. However, for informational purposes, please note that the cost is approximately 0.9% of payroll. This will first be reflected in the June 30, 1990 actuarial valuation.

Employee Data

We received data on 15,241 active State Employees and 10,995 Teachers as of June 30, 1989 who were participating in the System. On the average, the State Employees were age 44 and had 11 years of service; Teachers were age 43-1/2 with 15-1/2 years of service.

Retiree Data

We received data on 6,567 State Employee pensioners and 563 beneficiaries as of June 30, 1989. The pensioners' average monthly benefit was \$665, which is approximately 5% greater than the average benefit on June 30, 1988. There were 3,554 retired Teachers and 190 beneficiaries; the average monthly benefit was \$1,328 for the pensioners, which is approximately 7% 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, 6 percent had retired in the year ended June 30, 1989.

Retirement Fund

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 \$1.732 billion as of June 30, 1989, including Teachers Survivors Reserves. These assets are available as an offset to the actuarial liabilities for future benefits. At market value, assets totalled \$1.941 billion on June 30, 1989. At book value, assets amount to \$1.705 billion.

MARTIN E. SEGAL COMPANY

Actuarial Valuation

The actuarial valuation was prepared as of June 30, 1989. Our calculations were based on reasonable assumptions as to expected future experience. For this valuation, we have revised the assumed retirement ages, decreasing them by one-half a year to reflect the effect of the new 28-year pension. Also with this valuation, we have incorporated the legislated change in determining the payment on the unfunded liability. The payment is now based on level percent of payroll rather than sum of the digits amortization (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 \$20.3 million. This represents 5.2 percent of the reported payroll of participating State Employees as of June 30, 1989. The employer normal cost for Teachers is \$24.8 million or 6.2 percent of reported participating payroll.

For State Employees, the unfunded actuarial accrued liability* as of June 30, 1989 is \$449 million. For Teachers, the unfunded actuarial accrued liability as of June 30, 1989 is \$786 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 \$2.252 billion. The assets at actuarial value (excluding assets of the Teachers Survivors program) are short of this amount by \$573 million.

For the 1990-91 fiscal year, the State's statutory funding schedule, as amended, calls for a contribution equal to the employer normal cost and a payment on the unfunded actuarial accrued liability calculated to remain level as a percent of payroll and to fully fund the liability over a period of 26 years from July 1, 1990. For State Employees, these total to \$49.3 million, or 11.6 percent of the projected 1990-91 payroll of \$426.6 million and, for Teachers, the total employer costs are \$74.0 million, or 17.1 percent of projected payroll of \$433.2 million. (Sixty-four percent of the cost for Teachers is paid for by the municipalities.) In accordance with the statute

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

as amended, the percentages of normal cost and interest on the unfunded liability required to be contributed have gradually increased to the 100 percent level starting in fiscal 1985-86. Beginning in fiscal 1986-87, amortization of the frozen unfunded liabilities was also required and has been recognized in the recommendations made in this valuation and the preceding four valuations.

II. EMPLOYEE DATA

We received data on 15,241 State Employees and 10,995 Teachers participating in the System on June 30, 1989. The data included age, service, sex, and salary for each participant. The average salary as of June 30, 1989 of the participants was \$24,600 for State Employees and \$36,200 for Teachers. The data included 678 Correctional Officers and 145 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 \$20,000 for the State Employees for whom earnings were missing, and a \$25,000 annual salary for Teachers with unknown earnings.

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, the average salary for State Employees increased by 6.5 percent while Teachers' average salary increased by 5.8 percent. Aggregate payroll increased by 8.0 percent for State Employees and by 8.2 percent for Teachers.

Table 1A

Number and Average Salaries of Employees in Active Service
as of June 30, 1989 by Age and by Years of Service

STATE EMPLOYEES

Age	Total	Years of service												40 and over	Unknown
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 and over	Unknown				
Total	15,241	4,594	2,964	3,215	2,484	1,155	510	225	65	19	10				
Under 20	\$24,600	\$21,400	\$22,800	\$25,300	\$26,900	\$28,800	\$31,600	\$35,600	\$32,900	\$32,600	\$18,700				
	38	38													
20 - 24	\$16,400	\$16,400													
	588	551	36												
25 - 29	18,800	18,900													
	1,407	969	48												
30 - 34	21,000	20,900	\$20,900												
	1,993	793	550	74											
35 - 39	2,270	22,100	22,800	\$23,500											
	2,254	627	677	455	50										
40 - 44	25,000	22,900	26,900	26,200	25,600										
	2,285	562	537	342	220	15									
45 - 49	26,900	21,800	28,100	31,900	29,500	25,400									
	1,755	414	365	320	229	94									
50 - 54	26,000	21,500	25,700	28,700	32,400	30,500									
	1,639	315	302	296	184	139									
55 - 59	25,900	22,300	25,300	25,500	30,300	34,200									
	1,633	223	240	369	219	77									
60 - 64	24,900	20,500	23,700	24,800	26,500	32,000									
	1,231	86	167	316	180	54									
65 - 69	25,300	23,300	23,700	23,500	26,900	29,700									
	336	6	89	91	64	25									
70 and over	25,300	36,500	23,100	22,700	26,800	28,900									
	53	1	15	19	6	5									
Unknown	25,600	300	22,000	24,400	21,100	42,900									
	29	9	1	2	3										
Total	8,600	15,300	300	300	4,000										

RIERS

Table 1B

Number and Average Salaries of Employees in Active Service as of June 30, 1989 by Age and by Years of Service

TEACHERS

Age	Total	Years of service										40 and over	
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 and over			
Total	10,995	2,095	802	1,493	3,143	1,986	929	445	87	15			
20 - 24	\$36,200	\$26,800	\$34,000	\$37,200	\$38,400	\$39,500	\$40,600	\$41,100	\$42,500	\$41,200			
25 - 29	543	497	46	--	--	--	--	--	--	--			
30 - 34	23,700	23,200	\$29,200	--	--	--	--	--	--	--			
35 - 39	797	360	228	208	1	--	--	--	--	--			
40 - 44	30,900	26,300	33,000	36,700	\$39,300	37,900	37,900	37,400	37,900	37,900			
45 - 49	2,242	476	199	677	885	5	--	--	--	--			
50 - 54	35,300	27,900	34,300	37,400	37,900	\$37,300	39,300	39,900	39,900	40,800			
55 - 59	3,127	368	156	307	712	712	313	372	372	372			
60 - 64	37,200	29,100	34,900	36,900	38,500	39,300	39,300	39,700	39,700	41,200			
65 - 69	1,824	180	84	142	322	782	313	1	--	--			
70 and over	38,500	30,400	33,600	37,400	38,900	39,900	40,800	\$50,100	--	--			
Total	1,095	70	52	76	140	233	372	150	2	2			
70 and over	39,700	33,600	37,100	37,800	39,200	39,700	41,200	41,000	39,500	39,500			
70 and over	745	24	21	50	126	136	153	188	46	46			
70 and over	39,600	32,400	38,200	38,200	37,900	38,500	40,200	41,800	42,700	42,700			
70 and over	413	10	14	26	67	104	68	80	33	33			
70 and over	39,100	34,800	34,400	37,400	39,400	38,600	38,600	40,200	42,400	42,400			
70 and over	87	2	2	6	18	12	19	21	4	4			
70 and over	38,800	24,700	47,800	35,900	37,800	39,400	37,900	39,800	43,100	43,100			
70 and over	14	--	--	1	1	2	3	5	2	2			
70 and over	39,900	--	--	36,800	39,700	39,100	38,600	40,800	41,700	41,700			

Table 2A

Statistical Data on Active State Employees
on June 30, 1989 and 1988

	June 30, 1989	June 30, 1988
Number of covered employees	15,241	15,011
Total annual salary	\$ 374,238,300	\$ 346,491,500
Average annual salary	\$24,600	\$23,100
Average age	44	43-1/2
Average years of service	11	10-1/2
Number eligible for service retirement	1,658	1,373
Number vested but not eligible to retire	6,017	5,941

RHODE ISLAND ERS

Table 2B

Statistical Data on Active Teachers
on June 30, 1989 and 1988

	June 30, 1989	June 30, 1988
Number of covered employees	10,995	10,753
Total annual salary	\$ 398,363,600	\$ 368,248,300
Average annual salary	\$36,200	\$34,200
Average age	43-1/2	44
Average years of service	15-1/2	16
Number eligible for service retirement	1,209	887
Number vested but not eligible to retire	6,889	7,036

RHODE ISLAND ERS

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 group:

	<u>State Employees</u>	<u>Teachers</u>
Pensioners:		
Number	6,567	3,554
Average age	71	72
Average monthly benefit	\$665	\$1,328
Beneficiaries:		
Number	563	190
Average age	72	67
Average monthly benefit	\$590	\$840

Table 3A shows a distribution of the 340 State Employee pensions which became effective during the 1988-89 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 258 Teacher pensions which became effective during the 1988-89 fiscal year.

Tables 5A and 5B show distributions for all pensions in force as of June 30, 1989 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, 1989.

Table 3A

Pensions Awarded in the Year Ended June 30, 1989
by Type and by Monthly Amount

STATE EMPLOYEES

Monthly amount	Total	Type of pension				
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	340	288	27	2	12	11
\$ 50 - \$ 99	4	3	1	--	--	--
100 - 149	10	10	--	--	--	--
150 - 199	7	5	2	--	--	--
200 - 249	18	13	4	1	--	--
250 - 299	21	17	4	--	--	--
300 - 349	17	13	3	1	--	--
350 - 399	16	15	--	--	--	1
400 - 449	18	14	--	--	2	2
450 - 499	12	8	3	--	--	1
500 - 599	25	22	2	--	--	1
600 - 699	25	21	3	--	1	--
700 - 799	18	15	1	--	--	2
800 - 899	18	14	2	--	2	--
900 - 999	19	18	1	--	--	--
1,000 - 1,099	22	15	--	--	7	--
1,100 - 1,199	9	9	--	--	--	--
1,200 - 1,299	6	4	1	--	--	1
1,300 - 1,399	7	6	--	--	--	1
1,400 - 1,499	3	3	--	--	--	--
1,500 - 1,999	29	28	--	--	--	1
2,000 - 2,499	20	19	--	--	--	--
2,500 - 2,999	8	8	--	--	--	--
3,000 - 3,499	4	4	--	--	--	--
3,500 - 3,999	1	1	--	--	--	--
4,000 - 4,499	1	1	--	--	--	--
4,500 - 4,999	1	1	--	--	--	--
5,500 - 5,999	1	1	--	--	--	--

RIERS

Table 3B

Pensions Awarded in the Year Ended June 30, 1989
by Type and by Monthly Amount

TEACHERS

Monthly amount	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	258	239	8	1	10
\$ 200 - \$ 249	1	1	--	--	--
250 - 299	2	1	--	--	1
300 - 349	3	2	--	--	1
400 - 449	2	2	--	--	--
450 - 499	1	1	--	--	--
500 - 599	1	1	--	--	--
600 - 699	2	1	--	--	1
700 - 799	6	4	1	--	1
800 - 899	5	5	--	--	--
900 - 999	5	4	1	--	--
1,000 - 1,099	8	6	--	--	2
1,100 - 1,199	7	6	--	--	1
1,200 - 1,299	6	5	--	--	1
1,300 - 1,399	7	5	2	--	--
1,400 - 1,499	7	7	--	--	--
1,500 - 1,999	59	53	4	1	1
2,000 - 2,499	76	75	--	--	1
2,500 - 2,999	44	44	--	--	--
3,000 - 3,499	13	13	--	--	--
3,500 - 3,999	2	2	--	--	--
4,000 - 4,499	1	1	--	--	--

RIERS

Table 4A

Pensions Awarded in the Year Ended June 30, 1989
by Type and by Age on Effective Date

STATE EMPLOYEES

Age on effective date	Total	Service	Type of pension			
			Ordinary Disability	Accidental Disability	Legislator	Beneficiary
Total	340	288	27	2	12	11
35 - 39	2	--	1	--	--	1
40 - 44	4	--	4	--	--	--
45 - 49	7	2	3	--	2	--
50	1	--	--	--	--	1
51	4	3	--	--	1	--
52	3	1	2	--	--	--
53	1	1	--	--	--	--
54	4	1	2	--	--	1
55	4	2	1	--	1	--
56	5	3	2	--	--	--
57	11	6	2	--	2	1
58	8	6	2	--	--	--
59	12	6	3	1	1	1
60	59	57	--	--	1	1
61	31	29	2	--	--	--
62	54	51	1	--	--	2
63	29	27	1	1	--	--
64	22	20	1	--	--	1
65	33	33	--	--	--	--
66	14	14	--	--	--	--
67	7	7	--	--	--	--
68	5	5	--	--	--	--
69	6	5	--	--	1	--
70 - 74	13	9	--	--	3	1
75 - 79	1	--	--	--	--	1

Table 4B

Pensions Awarded in the Year Ended June 30, 1989
by Type and by Age on Effective Date

TEACHERS

Age on effective date	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	258	239	8	1	10
35 - 39	1	--	--	--	1
40 - 44	6	--	1	--	5
45 - 49	3	--	2	--	1
50	2	1	1	--	--
51	5	5	--	--	--
52	41 9	9	--	--	--
53	9	9	--	--	--
54	16	15	1	--	--
55	19	16	2	--	1
56	10	10	--	--	--
57	76 19	19	--	--	--
58	13	11	1	1	--
59	15	14	--	--	1
60	46	46	--	--	--
61	18	18	--	--	--
62	106 19	19	--	--	--
63	9	9	--	--	--
64	14	14	--	--	--
65	10	10	--	--	--
66	3	3	--	--	--
67	23 5	5	--	--	--
68	2	2	--	--	--
69	3	3	--	--	--
70 - 74	2	1	--	--	1

RIERS

Table 5A
Pensions in Payment Status on June 30, 1989
by Type and by Monthly Amount
STATE EMPLOYEES

Monthly amount	Total	Type of pension				Beneficiary
		Service	Ordinary Disability	Accidental Disability	Legislator	
Total	7,130	5,812	491	103	161	563
Under \$50	11	7	--	4	--	--
\$ 50 - \$ 99	175	136	12	9	--	18
100 - 149	276	216	22	10	--	28
150 - 199	578	459	60	5	--	54
200 - 249	667	527	85	5	--	50
250 - 299	551	439	77	4	--	31
300 - 349	486	393	48	7	--	38
350 - 399	445	372	31	3	--	39
400 - 449	339	284	21	1	5	28
450 - 499	309	253	27	1	2	26
500 - 599	570	465	31	7	23	44
600 - 699	402	316	21	9	24	32
700 - 799	342	255	18	12	21	36
800 - 899	288	220	15	8	16	29
900 - 999	257	215	11	4	11	16
1,000 - 1,099	248	194	4	8	23	19
1,100 - 1,199	160	124	4	2	13	17
1,200 - 1,299	122	104	2	--	3	13
1,300 - 1,399	123	90	--	--	20	13
1,400 - 1,499	101	95	--	1	--	5
1,500 - 1,999	387	368	2	2	--	15
2,000 - 2,499	172	165	--	1	--	6
2,500 - 2,999	72	67	--	--	--	5
3,000 - 3,499	31	31	--	--	--	--
3,500 - 3,999	13	12	--	--	--	1
4,000 - 4,499	1	1	--	--	--	--
4,500 - 4,999	2	2	--	--	--	--
5,000 - 5,499	1	1	--	--	--	--
5,500 - 5,999	1	1	--	--	--	--

Table 5B

Pensions in Payment Status on June 30, 1989
by Type and by Monthly Amount

TEACHERS

Monthly amount	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	3,744	3,410	124	20	190
\$ 50 - \$ 99	4	3	--	1	--
100 - 149	8	7	--	--	1
150 - 199	11	11	--	--	--
200 - 249	26	20	1	--	5
250 - 299	41	31	2	--	8
300 - 349	50	42	2	1	5
350 - 399	55	47	5	--	3
400 - 449	59	44	5	2	8
450 - 499	62	40	8	--	14
500 - 599	150	126	9	1	14
600 - 699	183	142	17	--	24
700 - 799	194	162	14	1	17
800 - 899	195	168	12	--	15
900 - 999	228	203	15	--	10
1,000 - 1,099	271	236	8	1	26
1,100 - 1,199	258	237	9	1	11
1,200 - 1,299	255	242	4	--	9
1,300 - 1,399	243	231	6	2	4
1,400 - 1,499	212	203	2	5	2
1,500 - 1,999	731	710	5	4	12
2,000 - 2,499	323	321	--	1	1
2,500 - 2,999	132	132	--	--	--
3,000 - 3,499	38	37	--	--	1
3,500 - 3,999	13	13	--	--	--
4,000 - 4,499	2	2	--	--	--

RIERS

Table 6A

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

STATE EMPLOYEES

Age on June 30, 1989	Total	Type of pension					Beneficiary
		Service	Ordinary Disability	Accidental Disability	Legislator	Beneficiary	
Total	7,130	5,812	491	103	161	563	
30 - 34	6	--	3	--	--	3	
35 - 39	17	--	10	3	--	4	
40 - 44	23	--	14	3	--	6	
45 - 49	29	1	14	5	4	5	
50 - 54	90	26	38	6	4	16	
55 - 59	270	136	66	15	26	27	
60 - 64	1,041	811	116	22	32	60	
65 - 69	1,838	1,592	105	24	25	92	
70 - 74	1,735	1,491	76	7	36	125	
75 - 79	1,109	951	33	13	15	97	
80 - 84	621	520	15	4	10	72	
85 - 89	263	220	1	1	5	36	
90 - 94	70	50	--	--	4	16	
95 - 99	14	12	--	--	--	2	
100 - 104	3	2	--	--	--	1	
105 - 109	1	--	--	--	--	1	

RIERS

Table 6B

Pensions in Payment Status on June 30, 1989
by Type and by Age

TEACHERS

Age on June 30, 1989	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	3,744	3,410	124	20	190
30 - 34	1	--	--	--	1
35 - 39	5	--	1	--	4
40 - 44	23	--	7	2	14
45 - 49	14	--	6	2	6
50 - 54	75	41	17	2	15
55 - 59	255	214	20	4	17
60 - 64	593	541	25	4	23
65 - 69	679	635	20	3	21
70 - 74	637	598	14	3	22
75 - 79	612	585	7	--	20
80 - 84	535	503	3	--	29
85 - 89	223	207	3	--	13
90 - 94	76	72	1	--	3
95 - 99	14	13	--	--	1
100 - 104	2	1	--	--	1

RIERS

IV. RETIREMENT FUND

The State maintains the Employees' Retirement Fund. The Retirement System provided us with financial statements as of June 30, 1989.

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, 1989 and 1988.

On June 30, 1989, assets as reported by the State totalled approximately \$1.705 billion. Table 8 shows the composition of the assets and compares them to those of the previous year. About 54 percent of the Fund was invested in fixed income securities such as bonds and notes. A year earlier, on June 30, 1988, the corresponding fixed income percent was 67 percent.

The financial statements indicate that 45 percent of the assets relate to State Employees, 52 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, 1989 and 1988.

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, 1989 amounted to \$1,732,248,575. 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	\$1,497,690,493
2. Net new money (including dividends and interest)	182,393,297
3. Preliminary value of assets at end of year: (1) + (2)	1,680,083,790
4. Market value of assets at end of year	1,940,907,714
5. Minimum actuarial value: 80% of (4)	1,552,726,171
6. Maximum actuarial value: 120% of (4)	2,329,089,257
7. Trial write-up: 20% of [(4) - (3)]	52,164,785
8. Trial actuarial value: (3) + (7)	1,732,248,575
9. Final actuarial value of assets at end of year: (8), but not less than (5) or more than (6)	1,732,248,575
10. Final write-up: (9) - (3)	52,164,785

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, 1989 and 1988

	1989	1988
Employer contributions	\$122,340,282	\$101,038,075
Member contributions	<u>59,840,261</u>	<u>62,058,104</u>
Total contributions	\$182,180,543	\$163,096,179
Net miscellaneous items	926,724	1,527,117
Investment income:		
Dividends	\$ 25,595,811	
Interest	94,228,285	
Capital gains (and losses)	119,551,790	
Expenses	<u>2,326,606</u>	<u>1,536,544</u>
Net investment income	<u>237,049,280</u>	<u>138,711,377</u>
Total income available for benefit payments	\$420,156,548	\$303,334,673
Benefit payments:		
Pension benefits	\$111,231,382	\$102,476,658
Death benefits	2,609,098	2,371,688
Contribution refunds	<u>4,370,980</u>	<u>3,981,228</u>
Total benefit payments	<u>118,211,460</u>	<u>108,829,573</u>
Excess of income over expenses	<u>\$301,945,088</u>	<u>\$194,505,099</u>

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

Table 8

Assets as of June 30, 1989 and 1988

	1989	1988
Cash	\$	\$
Accrued interest receivable	(270,709)	18,609,219
Investments	18,727,418	16,543,104
Government bonds	\$452,353,646	\$461,198,534
Corporate bonds	107,602,787	114,622,000
Common and preferred stocks and united partnership	757,289,030	421,643,315
Short-term paper	228,150,000	374,500,000
State Street Stiff Account	141,054,000	--
International bond	--	700,000
(Less) Unamortized premiums and discounts	N/A	(4,855,088)
Total assets	<u>\$1,704,906,172</u>	<u>\$1,402,961,084</u>

RHODE ISLAND ERS
MARTIN E. SEGAL COMPANY

Table 9

Allocation of Assets by Plan
as of June 30, 1989 and 1988

	1989	1988
State Employees:		
Employer reserves	\$604,614,842	\$496,016,337
Member reserves	<u>169,100,631</u>	<u>150,242,892</u>
Total State Employees reserves	\$ 773,715,473	\$ 646,259,229
Teachers:		
Employer reserves	\$635,475,948	\$490,136,765
Member reserves	<u>243,955,066</u>	<u>221,769,615</u>
Total Teacher reserves	879,431,014	711,906,380
Teachers Survivors:		
Employer reserves	\$ 42,416,484	\$ 35,846,344
Member reserves	<u>9,122,818</u>	<u>8,730,399</u>
Total Teachers Survivors reserves	51,539,302	44,576,743
Unallocated:		
Unclaimed benefit reserve	<u>220,383</u>	<u>218,732</u>
Total assets	<u>\$1,704,906,172</u>	<u>\$1,402,961,084</u>

RHODE ISLAND ERS

V. ACTUARIAL ASSUMPTIONS AND COST METHOD

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 service that gives rise to the pension obligation. The result is a series of employer contributions over a long period of years. A fund accumulates which earns investment income, thus reducing the ultimate cost. Beginning with the June 30, 1985 actuarial valuation, the actuarial cost method was changed as stipulated in Section 36-10-2 of the General Laws of Rhode Island. In addition, effective July 1, 1989, the method utilized to fund the unfunded frozen initial liability was changed. The actuarial cost method is reviewed 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 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. The assumptions applied in this valuation are the same as those used in the June 30, 1988 study, with the exception of the retirement age assumptions. Each assumption is reviewed in the following sub-sections.

Mortality Rates

We continue to apply mortality rates taken from the Male and Female 1971 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 gives some life expectancies 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 understate the System's cost. Accordingly, we use a salary projection to anticipate future increases in earnings.

Additionally, it is appropriate to compute pension 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 percent of his pay when he is young and a lower percent of his higher salary at a later age. Establishing 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 must anticipate, 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 gains 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:

<u>Age</u>	<u>Present Salary as a % of Age 65 Salary</u>	<u>Annual Increases (Rate %)</u>
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

As noted below, both projection of salary and an assumption as to future investment yield must consider future inflation, and the two are therefore related.

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.

Effective 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.

During fiscal 1988-89, the actuarially determined investment yield was 11.1 percent, or 3.6 percent greater than the assumed yield of 7.5 percent.

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>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 assumed service-connected disabilities.

<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 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 28 years of service for general employees and age 50 for State Correctional Officers. In the previous actuarial valuation, as of June 30, 1988, the service requirement for unreduced benefits (regardless of age) was 30 years.

With this valuation, we have changed the assumed retirement ages to reflect this benefit improvement which provides for unreduced retirement benefits after 28 years of service. We assume State Employees will retire at age 62-1/2 (in our previous valuation, this was 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 (previously this was 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, 1990 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 two items -- (1) the amount (including interest) which will amortize the remaining Unfunded Frozen Initial Liability as of June 30, 1988 over 27 years from July 1, 1989 plus (2) the Normal Cost, which is the current annual amount which will fund that portion

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, 1990 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 two items -- (1) the amount (including interest) which will amortize the remaining Unfunded Frozen Initial Liability as of June 30, 1988 over 27 years from July 1, 1989 plus (2) the Normal Cost, which is the current annual amount which will fund that portion

MARTIN E. SEEGAL COMPANY

of future benefit obligations not met by future unfunded liability payments or current assets over the future working lifetime of the active employees. Both the Normal Cost and the payment on the unfunded liability are calculated as a level percent of pay. This method of calculating the unfunded liability amount is different from that used in the June 30, 1988 actuarial valuation report. After that report was issued, the Legislature amended Sections 36-10-2 and 36-10-2.1 of the General Laws to change from sum-of-the-digits to level percent of salary funding.

Overall Actuarial Basis

We believe that the individual actuarial assumptions 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).

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.

RHODE ISLAND ERS

VI. RESULTS OF VALUATION

State Employees

The costs for State Employees as of June 30, 1989, including all benefit changes through that date, is developed in this sub-section. The funding statute calls for the State to contribute 100 percent of the projected normal cost plus a total amortization payment (interest plus principal) which will amortize the remaining unfunded liability over 27 years from July 1, 1989 on a basis where each successive year's amortization payment increases at the assumed rate of inflation over the prior year's payment. Based on this requirement and a projected participating payroll of \$426,600,000, the 1990-91 employer contribution "rate percent" for State Employees is 11.6 percent of payroll as developed below.

<u>Item</u>	<u>Amount</u>	<u>% of Payroll</u>
(1) Participating payroll	\$390,889,900	--
(2) Employer normal cost	20,323,800	5.1994%
(3) Frozen unfunded actuarial liability as of July 1, 1989	449,215,300	--
(4) Amortization payment (based on level percent of payroll)	25,355,800	6.5

<u>Item</u>	<u>Amount</u>	<u>% of Projected Payroll</u>
(5) Projected 1990-91 participating payroll	\$426,600,000	--
(6) 1990-91 employer normal cost = 5.1994% x (5)	22,180,600	5.2%
(7) Required contribution payable July 1, 1990 = 1.00 x (6) + 1.00 x (4)	47,536,400	11.1
(8) Required contribution payable monthly = (7) plus interest adjustment	49,319,000	11.6

The calculations, as completed through line 7 on the previous page, determine the employer contribution to be paid into the retirement fund at the beginning of each year with interest earnings starting from that date. However, contributions to the Fund are made monthly. Thus, about half a year's interest is lost, and the contribution must be increased to reflect this. Line 8 on the previous page reflects this adjustment.

The preceding chart includes the effect of a quarter of one percent increase in the employee contribution (for post-retirement health benefits) to the State Employees' Retirement System. The effect of this was to reduce the State's rate percent by 0.23 percent, reflecting the additional contribution by employees (0.25 percent) but reduced by the additional cost associated with paying contribution refunds with respect to the additional contributions (.02 percent). Consistent with this, it has been assumed that the State's contribution to the separate retiree health fund is 0.23 percent.

As shown on line (8) of the preceding chart, the rate percent on behalf of the State Employees' Retirement Plan is 11.6 percent. In addition, as reviewed in the preceding paragraph, the State's assumed cost to the retiree health fund is 0.23 percent. The total State rate percent is therefore 11.83 percent.

The June 30, 1988 actuarial valuation report showed a percent of payroll cost of 14.7 percent. As a result of the legislated change to percent of salary funding of the unfunded actuarial accrued liability, this rate percent was reduced to 12.1 percent. The following chart shows the effect of the various items which caused the rate percent to decrease from 12.1 percent to 11.83 percent between the June 30, 1988 and June 30, 1989 actuarial valuations:

Employer "rate percent" from June 30, 1988 actuarial valuation	12.1%
Investment gain during fiscal 1988-89	(0.76)
Effect of benefit improvements (28-year pension)	0.31
Net effect of additional employee contributions to the pension fund for post retirement health benefits	(0.23)
Miscellaneous net loss	<u>0.18</u>
Employer "rate percent" from June 30, 1989 actuarial valuation to the State Employees' Retirement Plan	11.6%
Employer "rate percent" to the retiree health fund	<u>0.23</u>
Total employer "rate percent"	11.83%

Teachers

The costs for Teachers as of June 30, 1989, including all benefit changes through that date, is developed in this sub-section. Applying the funding statute to the Teachers' costs and a projected participating payroll of \$433,200,000 results in a contribution "rate percent" requirement for fiscal 1990-91 of 17.1 percent. Thirty-six percent of this rate (6.16% of payroll) is payable by the State and sixty-four percent (10.94% of payroll) by the municipalities. The "rate percent" is developed as follows:

<u>Item</u>	<u>Amount</u>	<u>% of Payroll</u>
(1) Participating payroll	\$398,268,900	--
(2) Employer normal cost	24,782,500	6.2226%
(3) Frozen unfunded actuarial liability as of June 30, 1989	786,368,100	--
(4) Amortization payment	44,386,200	11.4

<u>Item</u>	<u>Amount</u>	<u>% of Projected Payroll</u>
(5) Projected 1990-91 participating payroll	\$433,200,000	--
(6) 1990-91 employer normal cost = 6.2226% x (5)	26,956,300	6.2%
(7) Required contribution payable July 1, 1990 = 1.00 x (6) + 1.00 x (4)	71,342,500	16.5
(8) Required contribution payable monthly = (7) plus interest adjustment	74,017,800	17.1

The calculations, as completed through line 7 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 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 8 above reflects this adjustment.

The June 30, 1988 actuarial valuation report showed a percent of payroll cost of 21.6 percent. As a result of the legislated change to percent of salary funding of the unfunded actuarial accrued liability, this rate percent was reduced to 17.2 percent. The following chart shows the effect of the various items which affected the Teachers' rate percent between the June 30, 1988 and June 30, 1989 actuarial valuations:

Employer "rate percent" from June 30, 1988 actuarial valuation	17.2%
Effect of benefit improvement (28-year pension)	0.65
Investment gain during fiscal 1988-89	(0.71)
Miscellaneous net actuarial gain	<u>(0.04)</u>
Employer "rate percent" from June 30, 1989 actuarial valuation	17.1%

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 \$51.5 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 \$9,600 for a maximum contribution of \$192 annually. Contributions in recent years on behalf of the approximate 5,500 members and benefit payments have both been approximately \$1 million. For the 1988-89 year, contributions totalled \$1,088,700 and benefit payments were \$1,263,600.

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 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, 1989 is as follows:

	<u>State Employees</u>	<u>Teachers</u>
Active members	\$ 437,009,200	\$ 638,248,000
Inactive members	14,593,600	18,661,000
Retired members	<u>567,312,900</u>	<u>576,499,700</u>
Total value of vested benefits	\$1,018,915,700	\$1,233,408,700
Assets at actuarial value	<u>786,125,500</u>	<u>893,536,700</u>
Unfunded value of vested benefits	<u>\$ 232,790,200</u>	<u>\$ 339,872,000</u>

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.).

MARTIN E. SEGAL COMPANY

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, 1989 for State Employees has been determined to be \$1,224,664,400. Approximately 52% of this amount is attributable to benefits on behalf of active employees with the balance (48%) attributable to the benefits of retirees and inactive employees. For Teachers the pension benefit obligation as of June 30, 1989 is \$1,630,934,600. Of this amount approximately 64% is attributable to active employees and the remaining 36% 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

As the funding law existed prior to its amendment in 1989, 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.

Currently, the statutory contribution comprises the normal cost and amortization of the remaining unfunded liability and certain changes in that liability over 27 years from July 1, 1989. These amortization payments are calculated to remain level as a percent of salary.

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 accrued 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 in part by the State of Rhode Island and in part by the (city) (town). The split between State and Municipality is specified in the statute. For fiscal year 1990-91, the State will pay 36% and the Municipality will pay 64%. 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:

	<u>Year Beginning July 1,</u>		
	<u>1987</u>	<u>1988</u>	<u>1989</u>
Active participants	10,307	10,753	10,995
Pensioners and beneficiaries	3,414	3,577	3,744
Inactive participants	2,006	2,121	2,380
Liability for accrued vested benefits	\$1,002,958,200	\$1,070,703,600	\$1,233,408,700
Net assets at actuarial value	648,705,500	759,982,500	893,536,700

As shown in State's financial statements:

	<u>Year Ended June 30,</u>		
	<u>1987</u>	<u>1988</u>	<u>1989</u>
Employer contributions	\$ 60,558,867	\$ 58,958,711	\$ 72,217,030
Member contributions	<u>27,757,328</u>	<u>34,895,982</u>	<u>31,348,826</u>
Total contributions	\$ 88,316,194	\$ 93,854,693	\$103,565,856
Net miscellaneous income	332,766	1,331,824	766,545
Investment income	<u>52,810,779</u>	<u>69,646,982</u>	<u>121,392,937</u>
Total income available for benefit payments	\$141,459,740	\$164,833,499	\$225,725,338
Benefit payments	<u>46,271,415</u>	<u>51,883,396</u>	<u>58,199,115</u>
Excess of income over expenses	<u>\$ 95,188,325</u>	<u>\$112,950,103</u>	<u>167,526,222</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 percent of the aggregate participating payroll; and for fiscal year 1990-91, sixty-four percent of this rate percent is then promulgated to each

participating employer as the actuarial cost factor to be applied to its participating payroll (the remaining thirty-six percent 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>1987</u>	<u>1988</u> <u>1989 (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 April 24, 1990:

"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 combined 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.

MARTIN E. SEGAL COMPANY
CONSULTANTS AND ACTUARIES

607 BOYLSTON STREET
BOSTON, MA 02116
(617) 262-0550
FAX (617) 262-0097

April 24, 1990

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, 1989.

This certificate contains the following attached exhibits:

EXHIBIT I - Actuarial Cost Development of Fiscal Year
1990-91 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 each individual assumption used (a) is reasonably related to the experience of the plan and to reasonable expectations and (b) represents my best estimate of anticipated experience under the plan.

MARTIN E. SEGAL COMPANY, INCORPORATED

By: 

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

JRL/dg

EXHIBIT I

ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1990-91 CONTRIBUTION PERCENTAGE

A. STATE EMPLOYEES

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

- a. 15,241 active participants (including 7,675 fully vested) with total annual salaries of \$391,063,600
- b. 1,912 inactive participants
- c. 7,130 pensioners (including 563 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	\$1,673,160,000
	Active employees	\$1,091,253,500
	Inactive employees	14,593,600
	Pensioners and beneficiaries	567,312,900
2.	Actuarial value of assets	786,125,500
3.	Present value of future employee contributions	255,314,700
4.	Unfunded frozen actuarial liability	449,215,300
5.	Actuarial present value of future normal costs (item 1 - item 2 - item 3 - item 4).....	182,504,500
6.	Actuarial present value of future compensation	3,294,383,100
7.	Normal cost percentage (item 5 ÷ item 6)	5.54%
8.	Total compensation of employees below the assumed retirement age	\$366,855,000
9.	Normal cost (item 7 x item 8)	20,323,800
10.	Payment required to amortize unfunded frozen actuarial liability over 30 years (26 years remaining from July 1, 1990) calculated as a level percent of pay	25,355,800
11.	Total annual cost if paid on July 1, 1989 (item 9 plus item 10)	45,679,600

(Continued...)

EXHIBIT I

ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1990-91 CONTRIBUTION PERCENTAGE

A. STATE EMPLOYEES
(Continued)

12. Total annual cost if paid in uniform installments throughout the year (item 11 plus one-half year's interest)	\$47,392,600
13. Total annual cost based on 1990-91 projected participating payroll of \$426,600,000 if paid in uniform installments throughout the year	49,319,000
14. Item 13 amount as a percent of payroll	11.6%
Ratio of actuarial value of assets (line 2) to actuarial accrued liability (\$1,339,437,400): 58.69%	

Note: Included are 33 active employees unknown as to age, service, or both.

EXHIBIT I

ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1990-91 CONTRIBUTION PERCENTAGE

B. TEACHERS

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

- a. 10,995 active participants (including 8,098 fully vested) with total annual salaries of \$398,363,600
- b. 2,380 inactive participants
- c. 3,744 pensioners (including 190 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	\$2,278,565,500
	Active employees	\$1,683,404,800
	Inactive employees	18,661,000
	Pensioners and beneficiaries	576,499,700
2.	Actuarial value of assets.....	893,536,700
3.	Present value of future employee contributions	338,926,000
4.	Unfunded frozen actuarial liability	786,368,100
5.	Actuarial present value of future normal costs (item 1 - item 2 - item 3 - item 4)	259,734,700
6.	Actuarial present value of future compensation	3,987,364,900
7.	Normal cost percentage (item 5 / item 6)	6.51%
8.	Total compensation of employees below the assumed retirement age	\$380,684,000
9.	Normal cost (item 7 x item 8)	24,782,500
10.	Payment required to amortize unfunded frozen actuarial liability over 30 years (26 years remaining from July 1, 1990) calculated as a level percent of pay	44,386,200
11.	Total annual cost if paid on July 1, 1989 (item 9 plus item 10)	69,168,700

(Continued...)

EXHIBIT I

ACTUARIAL COST FOR DEVELOPMENT OF
FISCAL YEAR 1990-91 CONTRIBUTION PERCENTAGE

B. TEACHERS

(Continued)

12. Total annual cost if paid in uniform installments throughout the year (item 11 plus one-half year's interest)	\$71,762,500
13. Total annual cost based on 1990-91 projected participating payroll of \$433,200,000 if paid in uniform installments throughout the year	74,017,800
14. Item 13 as a percent of payroll	17.1%

Ratio of actuarial value of assets (line 2)
to actuarial accrued liability (\$1,842,998,400): 48.48%

EXHIBIT II

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, 1989.

	<u>Pension Benefit Obligation</u>	
	State	
	<u>Employees</u>	<u>Teachers</u>
1) Participants currently receiving benefits and terminated employees not yet receiving benefits	\$ 581,906,500	\$ 595,160,700
2) Current employees		
Accumulated employee contributions	161,348,300	239,833,200
Employer-financed vested	275,660,900	398,414,900
Employer-financed nonvested	<u>205,748,700</u>	<u>397,525,800</u>
3) Total pension benefit obligation	\$1,224,664,400	\$1,630,934,600

EXHIBIT III
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:

State Employees (Rate %)

<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 assumed service-connected.

Teachers (Rate %)

<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 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.

Salary scale:

<u>Age</u>	<u>Present salary as a % of salary at 65</u>	<u>Annual increase (Rate %)</u>
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: 62-1/2 (previously 63), or completion of service requirement, if later. Teachers: 61 (previously 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 1/2%

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.

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 originally was based on sum of (1) interest on outstanding balance, and (2) a payment is based on the sum-of-the-digits amortization method. In 1989, the Legislature amended the Sections 36-10-2 and 36-10-2.1 of the General Laws to adopt level percent of salary funding.

EXHIBIT IV
SUMMARY OF PLAN PROVISIONS

Service pension

	General Employees	Correctional Officers	Legislators		
Age requirement:	60	None	50	55	None
	or			or	
Service requirement:	10 yrs.	28 yrs. (previously 30)	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% per year of retirement, but not less than \$4,000.

Employee contribution rate

State Employees	7-3/4 [*] %
Teachers	8-1/2
Legislators	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 following the third anniversary of retirement.

* Of the 7-3/4 percent contribution by State employees, 1/4 percent reflects the amount required to provide for post-retirement health benefits. MARTIN E. SEGAL COMPANY