Report of the Actuary

MARTIN E. SEGAL COMPANY
INCORPORATED

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May 14, 1982

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

Dear Members of the Board:

We are pleased to submit herewith our Actuarial Valuation of the Municipal Employees' Retirement System 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 each municipality for the fiscal year beginning July 1, 1983.

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. Iannelli, Executive Director; Mr. John F. Sullivan, Assistant Director; and Mr. Carlo Mencucci, Senior 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:

Following the report, we have attached 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 yours,

MARTIN E. SEGAL COMPANY, INCORPORATED

By _____
Sherman C. Sass
Senior Vice President

By _____
Joseph C. Demty, A.S.A.

I. SUMMARY

Benefit Provisions

The Municipal Employees' Retirement System of Rhode Island covers employees of the many municipalities, housing authorities, water, and sewer districts which have elected to participate. There is one plan for general employees and a second optional plan for police and firemen*. General employees contribute 6 per cent of their annual earnings; those police and firemen under the optional program contribute 7 per cent.

The System generally provides unreduced benefits of 2 per cent of earnings. Such benefits are available to members at least age 58 with 10 years of service or after 30 years at any age. Police and firemen may retire at age 55 if they have 10 years of service or after 25 years at any age. Benefits are based on the average of the highest 3 consecutive years' earnings.

The plan also provides non-service-connected disability and vested benefits after 5 and 10 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.

Employee Data

We received data on 4,150 active general employees and 310 police and firemen as of June 30, 1981, who were participating in the system. The average salary was $10,800 for general employees and $15,100 for police and firemen. On the average, the general employees were age 46½ and had 9 years of service; police and firemen were age 38½ with 11½ years of service.

*Throughout this report, "general employees" means participants under the regular program and "police and firemen" means participants under the optional program.

Retiree Data

We received data on 1,276 pensioners and 21 beneficiaries as of June 30, 1981. The pensioners' average monthly benefit was $237. Of all the pensioners on the rolls, 8 per cent had retired in the year ended June 30, 1981.

Retirement Fund

As of June 30, 1981, the Fund had assets of approximately $75.5 million 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 what we believe are reasonable assumptions as to expected future experience. The assumptions are the same as those used in our previous actuarial valuation. We used the "entry age normal cost" method of funding, which spreads the cost of each employee's pension as a level percentage of his earnings from date of hire to assumed retirement age.

The employer normal cost* for general employees is $1.9 million. This is 4.4 per cent of the payroll of participating general employees. The employer normal cost for police and firemen is $0.4 million or 8.1 per cent of payroll.

For general employees, the actuarial liability* (for benefits earned before July 1, 1981) is $87.8 million of which $30.5 million represents the liability to those already receiving pensions. The unfunded actuarial liability at the end of the year is $21.8 million after accounting for assets of $66.0 million. For police and firemen, the actuarial liability is $11.9 million of which $2.9 million is for those receiving pensions.

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

The unfunded actuarial liability stands at $2.5 million after accounting for police and fire assets of $9.4 million.

The value of the System's vested benefits is $98 million. Thus the assets are short of this amount by $23 million.

Based on the normal cost plus an amortization payment of each municipality's unfunded actuarial liability, the annual employer cost as of June 30, 1981 adjusted for payment on December 31, 1981 is $4.8 million (10.8 per cent of covered payroll) for general employees and $0.6 million (13.8 per cent of covered payroll) for police and firemen. These amounts are in addition to the required employee contributions. The amortization payments for each municipality are generally based on the period remaining of an initial 25-year funding period. In some instances, these remaining periods have been lengthened in order to spread the effects of actuarial losses over a longer period.

II. EMPLOYEE DATA

We received data on 4,150 general employees and 310 police and firemen participating in the System on June 30, 1981. The data included age, service, sex, and salary for each of them. The average salary of the participants was $10,800 for general employees and $15,100 for police and firemen.

Tables 1A and 1B give detailed age, service and average salary data on general employees and police and firemen, respectively.

Tables 2A and 2B summarize certain basic statistics on active general employees and police and firemen. Table 2C gives active employee statistical data separately for each participating municipality. As we continue to receive data on an automated basis, we will be able to show year by year changes in this basic employee data.

The data we received for this valuation in respect of some of the municipalities seemed inconsistent, and in some cases, more incomplete, when compared to that of the prior year. In these situations, extra time and expense is incurred in troubleshooting and correcting these problems. Moreover, anomalous results are obtained when the data is inconsistent. However, for the majority of the municipalities, the data was usable. The Retirement Board has made much progress in improving the quality of the data. We urge that the Board continue to stress the importance of good data to the municipalities.

Table 1A

Number and Average Salaries of Employees in Active Service
as of June 30, 1981
by Age and by Years of Service

GENERAL EMPLOYEES

Age	Total	Years of service								
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 and over	Unknown
Total	4,150 $10,800	1,377 $10,100	1,222 $10,700	901 $10,600	332 $12,600	141 $12,700	77 $14,100	19 $13,600	27 $13,600	54 $ 8,800
Under 20	9 $ 7,800	8 $ 8,100	--	--	--	--	--	--	--	1 $ 6,100
20 - 24	169 9,700	152 9,700	15 $ 9,900	--	--	--	--	--	--	2 13,600
25 - 29	347 10,700	215 10,800	113 10,500	17 $10,600	--	--	--	--	--	2 10,700
30 - 34	374 11,700	166 10,800	125 12,600	72 12,600	4 $12,900	--	--	--	--	7 10,600
35 - 39	346 10,800	162 9,700	109 10,900	45 13,100	23 13,700	5 $14,100	--	--	--	2 12,000
40 - 44	426 10,500	171 8,900	138 10,600	72 11,600	27 15,300	14 12,500	--	--	--	4 10,300
45 - 49	498 10,700	137 9,700	165 10,500	128 10,300	32 13,700	19 13,900	11 $15,200	1 $10,100	--	5 8,900
50 - 54	675 10,700	164 9,700	204 10,300	187 9,800	72 13,000	19 16,300	21 16,700	1 12,400	7 $10,800	-- --
55 - 59	723 10,800	148 10,600	194 10,300	213 10,400	83 11,500	42 12,000	22 13,100	10 15,200	10 14,600	1 10,200
60 - 64	444 11,100	48 11,600	133 11,000	130 10,300	75 11,400	29 12,200	17 12,400	3 10,800	8 14,700	1 8,900
65 & over	98 10,900	3 11,300	20 9,500	34 10,200	16 13,900	13 9,200	6 11,700	4 13,000	2 13,900	-- --
Unknown	41 8,500	3 9,700	6 11,300	3 11,200	-- --	-- --	-- --	-- --	-- --	29 7,500

RHODE ISLAND MUNICIPAL ERS

Table 1B

Number and Average Salaries of Employees in Active Service
as of June 30, 1981
by Age and by Years of Service

POLICE AND FIREMEN

Age	Total	Years of service							
		0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	Unknown
Total	310 $15,100	59 $12,700	102 $14,500	74 $15,800	37 $16,200	21 $18,600	5 $22,300	2 $16,500	10 $14,200
Under 20	1 $10,600	1 $10,600	--	--	--	--	--	--	--
20 - 24	17 10,700	15 10,700	--	--	--	--	--	--	2 $10,300
25 - 29	56 13,700	27 13,300	28 $14,100	--	--	--	--	--	1 14,500
30 - 34	62 14,300	13 13,200	30 14,300	18 $15,100	--	--	--	--	1 15,900
35 - 39	58 15,100	2 12,900	19 14,400	23 15,700	9 $16,200	1 $16,100	--	--	4 13,900
40 - 44	41 15,700	1 19,900	8 14,200	19 15,300	13 16,800	--	--	--	--
45 - 49	23 17,200	-- --	3 15,800	5 15,600	5 14,800	7 19,900	2 $21,600	-- --	1 14,700
50 - 54	23 17,000	-- --	7 16,200	6 16,700	5 16,100	5 19,400	-- --	-- --	-- --
55 - 59	21 17,300	-- --	5 14,000	1 27,900	5 16,000	6 17,600	2 23,600	2 $16,500	--
60 - 64	7 17,500	-- --	2 16,500	2 18,300	-- --	2 16,000	1 21,000	-- --	-- --
Unknown	1 20,600	-- --	-- --	-- --	-- --	-- --	-- --	-- --	1 20,600

RHODE ISLAND MUNICIPAL ERS
Note: These statistics include the N. Kingstown, N. Providence, and Scituate Police who will leave the System July 1, 1982.

Table 2A

Statistical Data on Active Employees
On June 30, 1981 and 1980

GENERAL EMPLOYEES

	June 30, 1981	June 30, 1980
Number of covered employees	4,150	4,051
Total annual salary	$44,735,900	$38,009,500
Average annual salary	$10,800	$9,400
Average age	46½	47
Average years of service	9	9
Number eligible for service retirement	510	484
Number vested but not eligible to retire	987	911

RHODE ISLAND MUNICIPAL ERS

Table 2B

Statistical Data on Active Employees
On June 30, 1981 and 1980

POLICE AND FIREMEN

	June 30, 1981	June 30, 1980
Number of covered employees	310	310
Total annual salary	$4,665,600	$4,200,600
Average annual salary	$15,100	$13,600
Average age	38½	39
Average years of service	11½	10
Number eligible for service retirement	28	27
Number vested but not eligible to retire	111	102

RHODE ISLAND MUNICIPAL ERS

Note: These statistics include the Scituate Police who will leave the System July 1, 1981.

Table 2C

Statistical Data on Active Employees on June 30, 1981
by Municipality

Municipality	Number	Average age	Average service	Average salary
General Employees				
01 Barrington	166	47	9	$ 8,800
02 Bristol	118	47	9	11,300
03 Burrillville	105	48	8	8,300
07 Cranston	593	47½	10	10,600
09 E. Greenwich	121	46½	8	8,600
10 E. Providence	312	46	9½	13,800
14 Hopkinton	27	42½	6	7,800
15 Jamestown	32	48	9½	11,900
16 Johnston	185	48½	10½	9,900
21 Newport	305	43	10	11,800
22 New Shoreham	13	46	9½	9,300
23 N. Kingstown	177	45½	9	11,400
24 N. Providence	198	46	7½	9,200
25 N. Smithfield	82	49½	8	8,700
26 Pawtucket	707	46½	9½	11,500
29 Richmond	10	45½	7½	7,400
30 Scituate	67	48½	9½	7,900
31 Smithfield	112	49	7½	9,300
32 S. Kingstown	177	42½	6½	10,500
33 Tiverton	74	48½	7½	9,600
34 Warren	73	48½	9	9,900
36 Westerly	10	46	8½	18,000
39 Woonsocket	371	48	9½	10,800
51 Cranston Housing	12	50	9	12,600
52 E. Providence Housing	12	53	9½	12,800
53 Pawtucket Housing	36	48½	9½	13,400
56 Cumberland Housing	8	43	7	14,000
57 Lincoln Housing	8	42½	7	13,100
59 Bristol Housing	6	46½	5½	14,000
65 Burrillville Housing	2	60½	10½	11,700
66 N. Providence Housing	5	43	4	11,300
67 E. Smithfield Water	2	49	5	12,200
68 Greenville Water	3	45½	7	14,600
71 Warren Housing	3	51	5	14,700
72 Johnston Housing	5	51	10½	9,400
79 Coventry Housing	5	54	7½	10,800
80 S. Kingstown Housing	1	60½	3½	14,100
81 Southfield Sewer	7	37	3	12,300
Police and Fire				
50 E. Greenwich Fire	12	51	13½	20,600
54 E. Greenwich Police	21	39½	11	16,100
55 N. Kingstown P & F	90	37½	11	16,000
58 N. Providence P & F	23	38½	7	12,900
60 Barrington P & F	59	40	15	14,400
62 Warren Police	20	39½	10½	14,600
63 S. Kingstown P & F	38	35	10	15,800
64 Primrose Volunteer Fire	6	27½	2½	8,800
73 Scituate Police	12	35½	10	12,400
76 N. Smithfield Police	12	35	10½	12,900
77 Tiverton Fire	17	41½	10½	14,600

RHODE ISLAND MUNICIPAL ERS

Note: Scituate Police will leave the System as of July 1, 1981.

III. RETIREE DATA

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

The following are significant statistics on the retired group as of June 30, 1981 and 1980:

	June 30, 1981	June 30, 1980
Pensioners:		
Number	1,276	1,201
Average age	69	69
Average monthly benefit	$237	$225
Beneficiaries:		
Number	21	17
Average age	64½	63½
Average monthly benefit	$254	$247

Table 3 gives distributions of the 108 pensions awarded in the current year by type of pension and amount. Table 4 does the same for age at retirement.

Table 5 gives distributions for all pensions in force at the end of the fiscal year by type and amount. Table 6 does the same by age.

Table 7 has statistical data on pensioners and beneficiaries by municipality.

The data on retirees was reasonably good for retired employees. However, it was not certain that beneficiaries were being classified correctly.

We again recommend that this information be maintained by this system so that it can be incorporated in the next review.

Table 3

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

Monthly Amount	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	108	92	12	2	2
Under $50	5	5	--	--	--
$ 50 - $ 99	7	6	1	--	--
100 - 149	9	7	2	--	--
150 - 199	21	16	5	--	--
200 - 249	13	13	--	--	--
250 - 299	8	6	1	--	1
300 - 349	8	7	--	--	1
350 - 399	5	4	1	--	--
400 - 449	5	5	--	--	--
450 - 499	6	5	1	--	--
500 - 599	11	10	--	1	--
600 - 699	3	2	1	--	--
700 - 799	2	2	--	--	--
800 - 899	2	1	--	1	--
900 - 999	2	2	--	--	--
1,300 - 1,399	1	1	--	--	--

Table 4

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

Age on Effective Date	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	108	92	12	2	2
35 - 39	1	--	--	1	--
40 - 44	1	--	--	1	--
45 - 49	8 2	1	1	--	--
50	1	--	1	--	--
51	3	--	3	--	--
55	2	1	1	--	--
56	2	--	1	--	1
57	25 1	--	1	--	--
58	17	16	--	--	1
59	3	3	--	--	--
60	7	5	2	--	--
61	8	7	1	--	--
62	43 17	17	--	--	--
63	3	3	--	--	--
64	8	7	1	--	--
65	12	12	--	--	--
66	6	6	--	--	--
67	28 2	2	--	--	--
68	3	3	--	--	--
69	5	5	--	--	--
70	3	3	--	--	--
71	1	1	--	--	--

Table 5

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

Monthly Amount	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	1,297	1,142	99	35	21
Under $50	60	53	5	1	1
$ 50 - $ 99	180	171	9	--	--
100 - 149	232	212	18	1	1
150 - 199	257	217	36	1	3
200 - 249	149	126	15	1	7
250 - 299	77	71	4	--	2
300 - 349	86	71	4	7	4
350 - 399	51	42	2	6	1
400 - 449	48	42	1	3	2
450 - 499	48	40	4	4	--
500 - 599	52	44	--	8	--
600 - 699	19	17	1	1	--
700 - 799	17	17	--	--	--
800 - 899	9	7	--	2	--
900 - 999	7	7	--	--	--
1,000 - 1,099	2	2	--	--	--
1,100 - 1,199	1	1	--	--	--
1,200 - 1,299	1	1	--	--	--
1,300 - 1,399	1	1	--	--	--

Table 6

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

Age on June 30, 1981	Total	Type of pension			
		Service	Ordinary Disability	Accidental Disability	Beneficiary
Total	1,297	1,142	99	35	21
30 - 34	2	--	--	2	--
35 - 39	6	--	3	2	1
40 - 44	6	--	2	4	--
45 - 49	14	2	9	1	2
50 - 54	30	7	16	6	1
55 - 59	78	48	19	5	6
60 - 64	233	206	21	6	--
65 - 69	366	340	18	4	4
70 - 74	282	271	7	2	2
75 - 79	177	168	3	3	3
80 - 84	76	73	1	--	2
85 - 89	24	24	--	--	--
90 - 94	3	3	--	--	--

Table 7

Pensioner and Beneficiary Statistical Data as of June 30, 1981
By Municipality

Municipality	Number	Average Age	Average Monthly Benefit
General Employees			
01 Barrington	62	66½	$250
02 Bristol	36	67	244
03 Burrillville	9	63	204
07 Cranston	217	70½	201
09 E. Greenwich	19	63½	296
10 E. Providence	130	69	249
14 Hopkinton	7	75½	194
15 Jamestown	6	71	182
16 Johnston	27	66½	203
21 Newport	108	68½	300
22 New Shoreham	1	71½	47
23 N. Kingstown	39	70½	193
24 N. Providence	44	68	209
25 N. Smithfield	18	69½	139
26 Pawtucket	239	70½	213
29 Richmond	--	--	--
30 Scituate	21	70½	226
31 Smithfield*	27	67	266
32 S. Kingstown	31	69	198
33 Tiverton	22	70	192
34 Warren	26	69½	201
36 Westerly	7	65½	628
39 Woonsocket	127	69½	214
51 Cranston Housing	1	71½	265
52 E. Providence Housing	1	70½	185
53 Pawtucket Housing	11	69½	323
56 Cumberland Housing	--	--	--
57 Lincoln Housing	--	--	--
59 Bristol Housing	--	--	--
65 Burrillville Housing	--	--	--
66 N. Providence Housing	--	--	--
67 E. Smithfield Water	2	65½	364
68 Greenville Water	1	62½	261
71 Warren Housing	--	--	--
72 Johnston Housing	--	--	--
79 Coventry Housing	--	--	--
80 S. Kingstown Housing	--	--	--
81 Smithfield Sewer	--	--	--
	--	--	--
Police and Fire			
50 E. Greenwich Fire	--	--	--
54 E. Greenwich Police	7	65	257
55 N. Kingstown P & F	16	63	483
58 N. Providence P & F	5	60½	336
60 Barrington P & F	13	60	452
62 Warren Police	6	56½	540
63 S. Kingstown P & F	5	58½	416
64 Primrose Volunteer Fire	1	67½	303
73 Scituate Police	1	52½	497
76 N. Smithfield Police	1	62½	224
77 Tiverton Fire	3	66½	471

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*Includes 2 pensioners formerly covered by the Smithfield Police and Fire Plan.

Note: Scituate Police will leave the System as of July 1, 1981.

IV. RETIREMENT FUND

The State maintains the Municipal 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 8 gives a summary of income and expenditures for the year ended June 30, 1981.

At June 30, 1981, assets totalled approximately $75.5 million. Table 9 gives a breakdown of the assets. About 73 per cent of the fund was invested in fixed income securities such as bonds and notes.

The financial statements indicate that 88 per cent of the assets relate to general employees, and 12 per cent are for police and firemen. There is also a small unallocated reserve for unclaimed benefits. Table 10 shows the allocation of assets in detail.

Table 8

Summary Statement of Income and Expenses
For Year Ended June 30, 1981

Employer contributions	$5,477,727		
Member contributions	2,975,156		
Total contributions		$8,452,883	
Net miscellaneous items		8,613	
Investment income:			
Dividends	$1,187,095		
Interest	5,072,094		
Capital gains	27,054		
Net investment income		6,286,243	
Total income available for benefit payments			$14,747,739
Benefit payments:			
Pension benefits		$3,700,526	
Death benefits		87,200	
Contribution refunds		505,484	
Total benefit payments			4,293,209
Excess of income over expenses			$10,454,529

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

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Table 9

Assets as of June 30, 1981

Cash		$ (1,482)
Accrued interest receivable		1,035,275
Investments		
Government bonds	$22,706,642	
Corporate bonds	19,715,000	
Common and preferred stocks	20,084,994	
Certificates of deposit and repurchase agreements	8,950,000	
Commercial Paper	3,475,500	
(Less) Unamortized premiums and discounts	(510,928)	74,421,208
Total assets		$75,455,002

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

RHODE ISLAND MUNICIPAL ERS

Table 10

Allocation of Assets by Plan
as of June 30, 1981

General Employees:	$48,587,593	
Retirement reserves	2,499,914	
Employer reserves	14,947,247	
Member reserves		$66,034,754
Total General Employees Reserves		
Police and Fire:	$ 5,839,344	
Retirement reserves	1,328,698	
Employer reserves	2,234,711	
Member reserves		9,402,753
Total Police and Fire reserves		
Unallocated:		17,495
Unclaimed benefit reserve		$75,455,002
Total assets		

RHODE ISLAND MUNICIPAL ERS

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 obligations. The result is an employer contribution which anticipates future costs. 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 our previous actuarial valuation.

Mortality Rates

We assumed that mortality rates would conform with the 1971 Group Annuity Mortality Table. This is a recently published table of pension plan mortality, and we believe it will be a reasonable basis for experience under the System. It is one of the tables in general use in valuing pension plans in the United States. Table 11 gives some life expectancies after retirement.

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 costs were calculated as a level dollar amount for an individual, the cost might be a high per cent of his pay when he was young and a lower per cent of his salary at a later age. By 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 salary schedules. The salary scale factors are:

Age	Present Salary as a % of Age 65 Salary	Annual Increases (Rate %)
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 parellel 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 municipal 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 except retirement would be as follows:

General Employees (Rate %)

Age	Death*	Disability	Withdrawal	Total*
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.

Optional Police and Fire (Rate %)

Age	Death*	Disability	Withdrawal	Total*
20	.05	.12	--	.17
25	.06	.17	--	.23
30	.08	.22	--	.30
35	.11	.29	--	.41
40	.16	.44	--	.60
45	.29	.72	--	1.01
50	.53	1.21	--	1.74
55	.85	--	--	.85

50% 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 because of rounding.

Retirement Ages

The System provides unreduced benefits as early as age 58 for general employees and 55 for police and firemen. Long service employees may get unreduced or reduced benefits at even younger ages. We have assumed general employees will retire at age 65, or completion of 10 years of service if later. Police and firemen retirements are assumed to occur when the officer

is both age 60 and has 10 years of service. In any case where the employee already meets these assumed conditions of age and service, it is projected that he or she will retire immediately.

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 - will reduce 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 10 and 20 years from now.

We selected an investment return assumption of 6½ 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.

Cost Method

We have used the "entry age normal cost method of funding". 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 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, gains or losses will develop, with appropriate decreases or increases in future costs.

Missing Data

It was also 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 VI

Selected Rates of Male Active Members at Specified Ages

Age	Male	Female
20	.05	.04
21	.05	.03
22	.05	.03
23	.05	.03
24	.05	.04
25	.05	.04
26	.05	.04
27	.05	.04
28	.05	.04
29	.05	.04
30	.05	.04
31	.05	.04
32	.05	.04
33	.05	.04
34	.05	.04
35	.05	.04
36	.05	.04
37	.05	.04
38	.05	.04
39	.05	.04
40	.05	.04
41	.05	.04
42	.05	.04
43	.05	.04
44	.05	.04
45	.05	.04
46	.05	.04
47	.05	.04
48	.05	.04
49	.05	.04
50	.05	.04
51	.05	.04
52	.05	.04
53	.05	.04
54	.05	.04
55	.05	.04
56	.05	.04
57	.05	.04
58	.05	.04
59	.05	.04
60	.05	.04
61	.05	.04
62	.05	.04
63	.05	.04
64	.05	.04
65	.05	.04

[NOT: Range Benefit Revision Table

VI. RESULTS OF VALUATION

General Employees

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

Item	Amount	% of Payroll
(1) Participating payroll	$44,715,000	--
(2) Employer normal cost	1,948,500	4.42
(3) Unfunded actuarial liability	21,562,000	--
(4) Amortization of unfunded actuarial liability	2,151,000	4.1
(5) Total annual cost if paid July 1, 1981 = (2) + (4)	4,661,500	10.5
(6) Total annual cost if paid in December = (5) plus ½ year interest	4,834,500	10.8

Police and Firemen

The costs for police and firemen as of June 30, 1981, developed as follows:

Item	Amount	% of Payroll
(1) Participating payroll	$4,991,000	--
(2) Employer normal cost	570,000	8.11
(3) Unfunded actuarial liability	2,430,000	--
(4) Amortization of unfunded actuarial liability	244,000	5.2
(5) Total annual cost if paid July 1, 1981 = (2) + (4)	821,000	18.3
(6) Total annual cost if paid in December = (5) plus ½ year interest	841,000	18.8

The calculations on completed assume that the employer contributions will be paid into the retirement funds at the beginning of each year, and will start to earn interest from that time. In fact, the money is deposited in December. Thus, about half a year's interest is lost, and the contributions should be increased to reflect this loss. These adjustments are incorporated in line 6 of the above groups.

Comments on Results

The costs reported on the preceding page are for the System as a whole. The principal cost factors for each municipality are shown in Table 12. (The total of the unfunded actuarial liabilities shown in Table 12 exceeds the total shown on the preceding page because some municipalities have assets in excess of their actuarial liabilities -- that is, they are "overfunded." Table 12 shows zero balances for these municipalities, but for the System as a whole the overfunding of these municipalities reduces the unfunded actuarial liability.)

The amortization shown on line 4 is the total of the amortization requirements for the individual municipalities over a period of 25 years from the date the municipality joined the System. The earliest membership date is 1957; those original groups have only one year remaining on their amortization program. Other groups have more years left. As mentioned earlier, some of the amortization periods have been lengthened to spread the effects of actuarial losses over a longer period. On a dollar-weighted basis, the remaining amortization period is about 11 years for general employees and 15 years for police and firemen. That is, the total amortization payment reported above would pay off the total unfunded actuarial liability over that period of time.

Looking at the total cost figures compared to the previous year, it can be seen that for general employees, costs increased by 0.5 per cent. of payroll (from 10.0 per cent to 10.5 per cent). The normal cost percentage remained stable at 4.4 per cent and there was an increase in the amortization payment when expressed as a per cent of payroll (from 5.6 per cent to 6.1 per cent). The dollar-weighted aggregate amortization period remained the same for the general employee group.

For police and firemen, costs increased by 0.2 per cent of payroll (from 13.1 per cent to 13.3 per cent). The normal cost percentage decreased slightly from 8.2 per cent to 8.1 per cent and the amortization payment as a per cent of payroll increased by 0.4 per cent (from 4.8 per cent to 5.2 per cent). (Detail percentages do not add because

of rounding.) The dollar-weighted aggregate amortization period declined by two years for this group.

Table 13 shows the recommended rates for each participating municipality. These rates are to be effective for the year beginning July 1, 1983. The total rates are separated into normal cost and unfunded liability amortization components. For comparison, the 1982 and 1981 recommended total rates are also shown. In addition, the remaining amortization periods for each municipality are presented. For the years beginning July 1, 1982 and 1983, the rate for Hopkinton (code 14) reflects the adoption of the "2% Plan." The Town of New Shoreham and Smithfield Sewer Authority are the only new entering groups as of June 30, 1981.

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 pension expense charge, 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 System 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. In this calculation, future employment by the employee is not a condition for the receipt of benefits. Thus, it includes the present value of an immediate or deferred pension for all pensioners, beneficiaries, vested former employees, and active participants with at least 10 years of service. For active employees with less than 10 years of service, only the accumulated employee contributions are included, since that is all such employees would receive if they had no further employment.

For the Municipal Employees' Retirement System, the value of vested benefits is as follows:

	General Employees	Police and Firemen
Active members	$58,757,700	$6,176,200
Retired members	30,466,200	2,902,800
Total value of vested benefits	$89,223,900	$9,079,000
Assets	66,034,700	9,403,200
Unfunded value of vested benefits	$23,189,200	$ --

Table 12 includes the unfunded vested benefits for each municipality.

Overall Status

As Table 13 shows, the costs for some municipalities differ substantially from those reported last year. The major reason this occurs is the effect of actuarial gains and losses, one example of which will explain the situation. In a large system, if some participants retire earlier than assumed due to disability, for example, the impact on the total system is generally not significant. However, the impact on the costs of a small system (such as a municipality) can be quite dramatic if the retiree is one of its members. As a whole, the assumptions we employ are reasonable for the whole system, but for any one system at any one time, the assumptions and the actual experience may differ significantly. When this happens, the individual system's liabilities will be substantially affected resulting in yearly fluctuations. We recommend the continuation of the practice of annual valuations and look forward to working with the Retirement Board in this effort.

Table 12

Actuarial Cost Factors as of June 30, 1981
by Municipality

Municipality	Year Joined	Employer Normal Cost	Unfunded Actuarial Liability	Value of Unfunded Vested Benefits
General Employees				
01 Barrington	1957	$ 67,300	$ 718,700	$ 755,300
02 Bristol	1957	62,100	154,500	118,600
03 Burrillville	1968	42,800	422,600	644,100
07 Cranston	1963	269,000	3,242,000	3,772,200
09 E. Greenwich	1957	50,200	123,800	95,700
10 E. Providence	1961	163,500	1,697,400	1,669,500
14 Hopkinton	1969	9,400	73,200	14,600
15 Jamestown	1964	17,300	69,200	159,800
16 Johnston	1968	93,500	532,700	660,800
21 Newport	1966	106,300	3,355,200	3,845,400
22 New Shoreham	1980	4,500	123,400	100,100
23 N. Kingstown	1957	81,900	129,400	193,300
24 N. Providence	1961	85,600	931,200	855,800
25 N. Smithfield	1964	40,200	57,000	70,000
26 Pawtucket	1962	342,500	5,965,400	6,364,900
29 Richmond	1979	3,900	82,200	116,200
30 Scituate	1967	23,800	353,300	298,900
31 Smithfield	1959	56,600	456,900	227,700
32 S. Kingstown	1957	81,800	26,000	--
33 Tiverton	1964	40,900	469,200	497,700
34 Warren	1957	36,400	279,700	273,200
36 Westerly	1976	7,400	630,400	627,900
39 Woonsocket	1962	185,500	1,748,900	1,800,600
51 Cranston Housing	1968	7,700	--	26,400
52 E. Providence Housing	1968	10,300	32,800	69,400
53 Pawtucket Housing	1968	22,200	--	--
56 Cumberland Housing	1969	4,300	35,600	31,700
57 Lincoln Housing	1969	4,700	--	12,900
59 Bristol Housing	1970	4,000	--	--
65 Burrillville Housing	1972	1,900	11,000	17,300
66 N. Providence Housing	1973	2,600	--	--
67 E. Smithfield Water	1973	1,300	49,700	42,400
68 Greenville Water	1973	2,000	35,100	23,200
71 Warren Housing	1975	2,600	1,700	--
72 Johnston Housing	1976	3,000	51,800	74,900
79 Coventry Housing	1977	3,500	37,800	25,800
80 S. Kingstown Housing	1977	1,000	--	--
81 Smithfield Sewer	1980	3,000	19,300	9,500
Police and Fire				
50 E. Greenwich Fire	1967	27,000	167,100	40,100
54 E. Greenwich Police	1968	27,400	240,300	38,300
55 N. Kingstown P & F	1968	112,000	727,300	--
56 N. Providence P & F	1968	28,400	161,400	37,200
60 Barrington P & F	1970	65,800	409,200	--
62 Warren Police	1970	23,400	409,600	271,600
63 S. Kingstown P & F	1971	44,000	283,100	--
64 Primrose Volunteer Fire	1972	3,800	--	--
73 Scituate Police	1976	11,500	--	--
76 N. Smithfield Police	1977	10,900	41,100	--
77 Tiverton Fire	1977	22,600	150,100	49,200

RHODE ISLAND MUNICIPAL ERS

Note: Scituate Police will leave the System as of July 1, 1982

Table 13

Rhode Island Municipal Employees' Retirement System
Recommended Contribution Rates

	Municipality	YEAR BEGINNING JULY 1, 1983 Amortization Period	Normal Cost	Past Service	Total Rate	TOTAL RATE YEAR BEGINNING JULY 1982	1981
General Employees			4.76%	7.16%	11.92%	13.91%	13.39%
01	Barrington	9	4.81	4.24	9.05	6.47	9.91
02	Bristol	3	5.08	5.77	10.85	10.14	10.19
03	Burrillville	12	4.43	7.54	11.97	12.81	12.99
07	Cranston	9	5.01	1.61	6.62	4.76	4.93
09	E. Greenwich	10	3.91	9.17	13.08	12.46	12.78
10	E. Providence	5	4.58	3.92	8.50	7.70	7.62
14*	Hopkinton	13	4.69	2.90	7.59	6.99	4.43
15	Jamestown	8	5.29	3.47	8.76	7.88	7.47
16	Johnston	12	3.06	8.02	11.08	10.80	10.14
21	Newport	21	3.83	8.30	12.13	--	--
22	New Shoreham	24	4.18	1.28	5.46	4.05	4.42
23	N. Kingstown	6	4.85	4.40	9.25	8.53	10.44
24	N. Providence	21	5.81	1.28	7.09	5.99	6.15
25	N. Smithfield	8	4.34	6.29	10.63	10.27	10.75
26	Pawtucket	21	5.45	9.18	14.63	6.22	--
29	Richmond	23	4.64	7.92	12.56	13.32	15.22
30	Scituate	12	5.60	8.76	14.36	12.40	10.97
31	Smithfield	6	4.54	1.45	5.99	4.65	4.67
32	S. Kingstown	1	5.92	10.48	16.40	15.57	14.18
33	Tiverton	8	5.18	6.81	11.99	10.92	12.62
34	Warren	7	4.25	30.16	34.41	40.03	30.02
36	Westerly	21	4.78	8.74	13.52	12.56	12.99
39	Woonsocket	6	5.31	--	5.31	4.89	5.29
51	Cranston Housing	12	6.91	2.58	9.49	11.29	11.74
52	E. Providence Housing	12	4.75	--	4.75	5.08	5.54
53	Pawtucket Housing	12	3.95	2.72	6.67	4.50	5.03
56	Cumberland Housing	20	4.66	--	4.66	5.18	4.43
57	Lincoln Housing	13	4.90	--	4.90	5.60	4.86
59	Bristol Housing	14	8.41	4.04	12.45	12.73	13.13
65	Burrillville Housing	21	4.76	--	4.76	4.66	6.94
66	N. Providence Housing	21	5.50	16.22	21.72	13.02	14.92
67	E. Smithfield Water	25	4.73	6.94	11.67	12.56	15.42
68	Greenville Water	21	6.10	0.26	6.36	7.26	5.10
71	Warren Housing	19	6.58	9.34	15.92	17.69	19.51
72	Johnston Housing	21	6.69	5.90	12.59	12.50	13.07
79	Coventry Housing	21	7.09	--	7.09	6.25	6.84
80	So. Kingstown Housing	21	3.61	1.75	5.36	--	--
81	Smithfield Sewer	24					
Police and Fire							
50	E. Greenwich Fire	21	11.31	5.80	17.11	16.97	17.65
54	E. Greenwich Police	21	8.38	6.12	14.50	13.94	15.00
55	N. Kingstown Fire	17	8.05	4.85	12.90	12.96	13.76
58	N. Providence Fire	13	9.89	6.14	16.03	17.50	23.60
60	Barrington P & F	21	7.98	4.12	12.10	12.62	14.39
62	Warren Police	24	8.27	11.35	19.62	18.76	20.16
63	S. Kingstown P & F	8	7.57	7.51	15.10	12.79	14.00
64	Primrose Volunteer Fire	16	7.37	--	7.37	7.42	11.71
76	N. Smithfield Police	21	7.25	2.28	9.53	9.06	9.50
77	Tiverton Fire	21	9.43	5.19	14.62	14.66	16.52

* "1 2/3% Plan" for 1981, "2% Plan" for 1982 and 1983

MARTIN E. SEGAL COMPANY
INCORPORATED

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May 14, 1982

MUNICIPAL 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. General employees
- B. Police and firemen

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 reasonable 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. GENERAL EMPLOYEES

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

a. 4,150 active participants (including 1,497 fully vested) with total annual salaries of $44,735,300
b. 1,239 pensioners (including 10 beneficiaries of deceased pensioners and active employees)

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

1.	Total normal cost		$ 4,630,200
2.	Projected employee contributions		2,683,700
3.	Employer normal cost		1,946,500
4.	Actuarial liability - total		87,827,400
	Active employees	$57,361,200	
	Pensioners (including beneficiaries of deceased pensioners and active employees)	30,466,200	
5.	Assets		66,034,700
6.	Unfunded actuarial liability		21,792,700

Liability for accrued vested benefits: $89,223,900

Note: Included are 66 active employees unknown as to age, service or both. Status of beneficiaries was unclear. No data was provided on terminated vested employees.

EXHIBIT I

ACTUARIAL COST FOR YEAR BEGINNING JULY 1, 1981

B. POLICE AND FIREMEN

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

a. 310 active participants (including 138 fully vested) with total annual salaries of $4,665,600
b. 58 pensioners (including 11 beneficiaries of deceased pensioners and active employees)

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

1.	Total normal cost		$ 703,500
2.	Projected employee contributions		326,700
3.	Employer normal cost		376,800
4.	Actuarial liability - total		11,889,400
	Active employees	$8,986,600	
	Pensioners (including beneficiaries of deceased pensioners and active employees)	2,902,800	
5.	Assets		9,403,200
6.	Unfunded actuarial liability		2,486,200

Liability for accrued vested benefits: $9,079,000

Note: Included are 10 active employees unknown as to age, service or both. Status of beneficiaries was unclear. No data was provided on terminated vested employees.

EXHIBIT III

SUMMARY OF PLAN PROVISIONS

Service pension

	General Employees		Police and Firemen	
Age requirement:	58	None	55	None
	or		or	
Service requirement:	10 years	30 yrs.	10 yrs.	25 yrs.

Amount: 2% of final average salary per year of service to a maximum of 75%. Final average salary is defined as the average of compensation earned during the highest 3 consecutive years prior to termination. Retirement is mandatory at age 70. For police and firemen, mandatory retirement is at age 65.

Early Retirement (Police and firemen only)

Age requirement: 50
Service requirement: 20 years
Amount: Regular pension accrued, reduced by 6% for each year of age less than 55.

Disability

Ordinary:

Age requirement: None
Service requirement: 5 years
Amount: 2% of final average salary at disability per year of service (but not less than 20%), payable immediately.

Accidental:

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 58 for general and at age 55 for police and firemen.

Pre-retirement death benefits

Ordinary death benefits:

Lump 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

Police and firemen's survivor's benefit:

Age requirement: None
Service requirement: None
Amount: 30% of final average salary to the spouse plus 10% to each child under age 18.

Accidental death benefit:

Age requirement: None
Service requirement: None
Amount: (a) 50% of salary to spouse or children under age 18, less workmen's compensation. Police and fire also receive 10% for each child under 18 to a maximum of 66 2/3%.
(b) Refund of employee's contributions.

Post-retirement death benefits:

Lump 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.

Police and firemen's survivor's benefit:

Same as pre-retirement

Employee contribution rate

6% for general employees, 7% for police and firemen, until 75% benefit is accrued.

Available options:

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