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Commonwealth of Massachusetts

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**ACTUARIAL VALUATION REPORT**

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AS OF JANUARY 1, 1995

FOR THE

**COMMONWEALTH'S TOTAL PENSION OBLIGATION**

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Division of Public Employee  
Retirement Administration

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Dated: December 28, 1995

SECTION I  
INTRODUCTION AND CERTIFICATION

This report presents the results of the actuarial valuation of all of the pension benefits which are the obligation of the Commonwealth of Massachusetts as follows:

- State Employees Retirement System.
- Massachusetts Teachers' Retirement System
- Boston Teachers
- Cost of Living allowances to local systems

The valuation was performed as of January 1, 1995 pursuant to G.L. c. 32, as amended by c. 697. This report will show results which reflect the funding schedule as described in c.32, s. 22C. The actuarial assumptions used to calculate the accrued liability and the normal cost are the same as those used in the actuarial valuation as of January 1, 1993. It is our opinion that the assumptions used are each reasonably related to the plan experience and expectations.

This valuation was based on member data as of December 31, 1994, which was supplied by the Boston, State, and Teachers' Retirement Boards as well as a selection of local boards for purposes of calculating COLA costs. Such tests as we deemed necessary were performed on the data to ensure accuracy. Asset information as of December 31, 1994 was provided by the Office of the State Treasurer, by the Pension Reserve Investment Management Board through the Comptroller's Office, and by the Annual Statement for the Financial Condition as submitted to this office by the Boston Retirement Board and the State Retirement Board in accordance with G.L. c. 32, ss. 20(5)(h), 23(1)(c) and 23(2)(e).

*Please see page 6 for more detail of these amounts.*

In our opinion, this report represents an accurate appraisal of the actuarial status of the Commonwealth's total pension obligation performed in accordance with generally accepted actuarial principles and practices relating to pension plans.

Respectfully submitted,  
Public Employee Retirement Administration

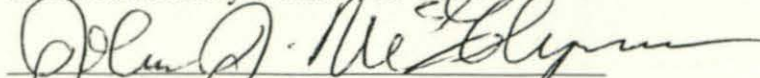


BARBARA J. WARE

Member of the American Academy of Actuaries

Fellow of the Society of Actuaries

Enrolled Actuary Number 93-3821



JOHN J. McGLYNN

Commissioner

Dated: December 28, 1995

SECTION II  
SUMMARY DISCUSSION

PART A Costs under Current Valuation

Section 22C of G.L., c. 32 mandates the establishment of a funding schedule for the Commonwealth of Massachusetts pension obligation. The schedule, as mandated by law, calls for payment of the Normal Cost plus an amortization payment on the Unfunded Actuarial Liability. The amortization payments must be such that the Unfunded Actuarial Liability as of January 1, 1987 is reduced to 0 by June 30, 2028. Under the present schedule, these payments increase at a rate of 2 1/2% per year. In addition, for the first ten years of the schedule (through the fiscal year ending June 30, 1998), the total payment must be no less than the total estimated cost of benefits in each of those years and the Pension Reserve Fund shall not be allowed to decrease its value on January 1, 1988, increased by 8% per year. The funding schedule is due to be revised in FY98.

The results of the January 1, 1995 actuarial valuation are as follows (\$000 omitted):

Total Normal Cost		\$681,485
Employee Contributions		<u>422,662</u>
Net Normal Cost		<u>\$258,823</u>
Total Actuarial Liability		\$20,558,209
Assets		<u>12,331,001</u>
Unfunded Actuarial Liability		<u>\$8,227,208</u>

Please see page 6 for more detail of these amounts.

**SECTION II**  
**SUMMARY DISCUSSION (Continued)**

**PART B Comparison with Prior Valuation**

Below we have shown the comparison between the current valuation and the January 1, 1993 valuation. The valuations were on the same basis (\$000 omitted).

	<u>1/1/95</u>	<u>1/1/93</u>	Increase (Decrease)	Increase (Decrease)
Total Normal Cost	\$681,485	\$695,603	(\$14,118)	(2.0%)
Employee Contributions	<u>422,662</u>	<u>386,976</u>	35,686	9.2%
Net Normal Cost	<u>\$258,823</u>	<u>\$308,627</u>	(\$49,804)	(16.1%)
Actuarial Liability				
Actives	\$11,412,663	\$10,850,039	\$562,624	5.2%
Retirees and Inactives	<u>9,145,546</u>	<u>9,384,673</u>	(239,127)	(2.5%)
Total	\$20,558,209	\$20,234,712	\$323,497	1.6%
Assets	<u>12,331,001</u>	<u>10,584,020</u>	<u>1,746,981</u>	16.5%
Unfunded Actuarial Liability	<u>\$8,227,208</u>	<u>\$9,650,692</u>	<u>(\$1,423,484)</u>	(14.8%)

The development of the Expected Unfunded Actuarial Liability based on the January 1, 1993 valuation is displayed on Page 6. The difference between this amount and the actual Unfunded Actuarial Liability is known as the Actuarial Gain or Loss. For the period from January 1, 1993 to January 1, 1995, the Actuarial Gain was \$1,824,880. Such a gain would be created largely by the lower than assumed increase in payroll since the January 1, 1993 valuation. Another contributing factor would be the clean up of the actuarial data which has occurred since 1993. For the COLA, the actuarial gain is attributable to the fact that no COLA increase was given in 1994. The Gains were offset somewhat by the lower than expected return on investments.

**PART C Considerations for the Future**

As discussed at the beginning of this section, the Commonwealth of Massachusetts must make payments in accordance with s. 22C of G.L. c. 32 for the Massachusetts Teachers' Contributory Retirement System, State Employees' Contributory Retirement System, Boston Teachers and for the cost-of-living allowances (COLA) granted to retirees and survivors of all local systems since the State assumed that liability.

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SECTION II  
SUMMARY DISCUSSION (Continued)

PART C Considerations for the Future (continued)

In accordance with s. 22C, the Commonwealth must appropriate no less than the Cost of Benefits in each year through fiscal year 1998. The average annual increase in the Cost of Benefits over the first five years of the schedule was approximately 8% and there was a substantial increase (about 17%) in the Cost of Benefits in FY93 due to the State Early Retirement Incentive. Since the funding schedule may be expected to increase at a rate of approximately 4% per year, the Cost of Benefits would be expected to continue to be the required appropriation amount through FY98. The Cost of Benefits is projected to increase at a rate of about 5% per year for FY96 through FY98.

PART D Other Information Available in this Report

As we stated in Part A of this section, the valuation results by type of benefit are on page 5. The development of the Actuarial Gain (Loss), as discussed in Part B, is on Page 6.

The actuarial information required by the auditors can be found on Pages 7 and 8.

In addition, we have included a summary of asset information on Page 9. Assets are shown on a market value basis. For purposes of developing the Unfunded Actuarial Liability, we have used the market value of assets. In future years, an actuarial value of assets will be considered that would result in a five-year average of market values. This will serve to moderate the fluctuations that can occur if an unadjusted market value is used each year.

On Pages 10 to 21, demographic information regarding the members of the State Employees' Retirement System, Massachusetts' Teachers' Retirement System, and Boston Teachers is presented. These charts display age, service and salary information for retirees and survivors. We have also included a description of the missing or invalid data and any assumptions which were made in consideration of such erroneous data.

A description of the funding method used in calculating valuation results is on Page 22, and the actuarial assumptions used are on Pages 23 to 25.

A brief summary of plan provisions appears on Pages 26 to 30.

Finally, a glossary of actuarial terminology is presented on Pages 31 to 32.

\* This represents the liability attributable to local employers. The liability attributable to CCA, the State Teachers, and Boston Teachers is calculated as part of the overall liability associated with those components.  
\*\* Includes members with assumed values.  
\*\*\* For Teachers this is adjusted by the Early Retirement Incentive liability to be paid by local school districts.

SECTION III  
SUMMARY OF VALUATION RESULTS

A. Number of Members on Current Valuation Date

	State Employees	State Teachers	Boston Teachers	Local COLA*	Total
1. Active Members	82,929	66,544	5,913	n/a	
2. Vested Terminated Members	1,565	1,701	32	n/a	
3. Retired Members and Survivors	<u>42,418</u>	<u>28,413</u>	<u>2,312</u>	<u>n/a</u>	
Total	126,912	96,658	8,257	n/a	

B. Total Active Payroll \*\* \$2,938,877 \$2,603,883 \$230,791

C. Normal Cost

1. Superannuation	\$205,364	\$186,259	\$15,206		
2. Termination	24,953	17,823	2,048		
3. Disability	69,581	27,902	5,076		
4. Death	<u>42,981</u>	<u>35,890</u>	<u>2,556</u>		
Total Normal Cost	\$342,879	\$267,874	\$24,886	\$45,846	\$681,485
Employee Contribution	<u>229,614</u>	<u>176,426</u>	<u>16,622</u>	0	<u>422,662</u>
Net Employer Normal Cost	<u>\$113,265</u>	<u>\$91,448</u>	<u>\$8,264</u>	<u>\$45,846</u>	<u>\$258,823</u>

D. Actuarial Liability

1. Active					
a. Superannuation	\$3,721,548	\$5,005,557	\$395,510		
b. Termination	82,501	28,155	2,999		
c. Disability	475,968	271,419	50,615		
d. Death	<u>384,178</u>	<u>495,324</u>	<u>33,662</u>		
Total Actives	\$4,664,195	\$5,800,455	\$482,786	\$465,228	\$11,412,663
Vested Terminated Members	162,306	215,343	3,585	14,194	395,428
Non-Vested Terminated Members	50,301	41,671	574	0	92,546
Retirees and Survivors ***	<u>3,725,577</u>	<u>3,654,656</u>	<u>346,402</u>	<u>930,936</u>	<u>8,657,572</u>
Total Actuarial Liability	\$8,602,379	\$9,712,125	\$833,347	\$1,410,358	\$20,558,209
Assets (Market Value)	<u>5,879,194</u>	<u>6,014,075</u>	<u>437,732</u>	0	<u>12,331,001</u>
Unfunded Actuarial Liability	<u>\$2,723,185</u>	<u>\$3,698,050</u>	<u>\$395,615</u>	<u>\$1,410,358</u>	<u>\$8,227,208</u>
Funded Ratio (Ratio of Assets to Actuarial Liability)	68.3%	61.9%	52.5%	0.0%	60.0%

\* This represents the liability attributable to local employees. The liability attributable to COLA for State, Teachers, and Boston Teachers is calculated as part of the overall liability associated with those components.

\*\* Includes members with assumed values.

\*\*\* For Teachers this is adjusted by the Early Retirement Incentive liability to be paid by local school districts.

SECTION IV

DEVELOPMENT OF THE ACTUARIAL GAIN OR LOSS

(\$000 omitted)

A. Development of Expected Unfunded Actuarial Liability

	State	Teachers	Boston Teachers	Local COLA	Total
1. Unfunded Actuarial Liability, 1/1/93	\$3,666,787	\$3,778,512	\$372,600	\$1,832,793	\$9,650,692
2. Normal cost, 1/1/93	135,840	114,539	9,469	48,779	308,627
3. Interest on 1. and 2. at 8% per year	304,210	311,444	30,566	150,526	796,746
7. Appropriation paid during 1993	413,009	325,500	27,184	96,135	861,828
5. Interest on 4. (assume mid-year payment)	16,520	13,020	1,087	3,845	34,472
6. Expected Unfunded Actuarial Liability, 1/1/94 [1.+2.+3.-4.-5.]	\$3,677,308	\$3,865,975	\$384,364	\$1,932,118	\$9,859,765
7. Projected Normal Cost, 1/1/94	143,990	\$121,411	10,037	51,706	327,144
8. Interest on 6. and 7. at 8% per year	305,704	318,991	31,552	158,706	814,953
9. Appropriation paid during 1994	424,187	359,176	33,658	96,223	913,244
10. Interest on 9. (assume mid-year payment)	16,968	14,367	1,346	3,849	36,530
11. Expected Unfunded Actuarial Liability, 1/1/95 [6.+7.+8.-9.-10.]	\$3,685,847	\$3,932,834	\$390,949	\$2,042,458	\$10,052,088
B. Actual Unfunded Actuarial Liability, 1/1/95	2,723,185	3,698,050	395,615	1,410,358	8,227,208
C. Actuarial Gain (Loss) [A.11.-B.]	\$962,662	\$234,784	(\$4,666)	\$632,100	\$1,824,880



**SECTION V**  
**INFORMATION REQUIRED BY AUDITORS**

(\$000's omitted)

The information below and on the following page is required by the auditors in order to complete the financial statements for the Commonwealth. The Pension Benefit Obligation has been calculated in accordance with GASB Statement No. 5, and is a reflection of the system's status at the current time. The actuarial method which was used to determine these amounts is the Projected Unit Credit Cost Method, with salary increases. This method allocates an amount of benefit to each year of service, which is unlike the Entry Age Normal Cost Method, used in the valuation, which allocates a cost as a percent of salary to each year of service. See page 24 for more details on the Entry Age Normal Cost Method.

Pension expense as determined in accordance with APB Opinion No. 8 was also calculated using the Projected Unit Credit Cost Method.

**A. GASB STATEMENT NO. 5 - ACTUARIAL INFORMATION**

Projected Benefit Obligation as of 1/1/95 attributable to:	STATE	TEACHERS	BOSTON TEACHERS	COLA	TOTAL
1. Retirees and beneficiaries currently receiving benefits*	\$3,725,577	\$3,654,656	\$346,402	\$930,936	\$8,657,571
2. Terminated employees who have not yet received benefits or a return of contributions (inactives)	212,607	257,014	4,159	14,194	487,974
3. Current employees (active members)					
a. Accumulated employee contributions with interest	1,961,719	2,183,412	188,334	0	4,333,465
b. Vested benefits financed by the Commonwealth	1,710,724	2,768,736	220,348	454,806	5,154,614
c. Non-vested benefits financed by the Commonwealth	<u>582,709</u>	<u>297,094</u>	<u>31,051</u>	<u>87,238</u>	<u>998,092</u>
<b>Total Pension Benefit Obligation</b>	<b>\$8,193,336</b>	<b>\$9,160,912</b>	<b>\$790,294</b>	<b>\$1,487,174</b>	<b>\$19,631,716</b>
<b>Assets at Market Value</b>	<b><u>5,879,194</u></b>	<b><u>6,014,075</u></b>	<b><u>437,732</u></b>	<b><u>0</u></b>	<b><u>12,331,001</u></b>
<b>Unfunded Pension Benefit Obligation</b>	<b><u>\$2,314,142</u></b>	<b><u>\$3,146,837</u></b>	<b><u>\$352,562</u></b>	<b><u>\$1,487,174</u></b>	<b><u>\$7,300,715</u></b>

For Teachers, this is adjusted by the Early Retirement Incentive liability to be paid by local school districts.

**SECTION V**  
**B - INFORMATION REQUIRED BY AUDITORS (continued)**

	State	Teachers	Boston Teachers	COLA	Total
FY89 Unpaid Pension Liability	\$170,661	\$234,881	\$21,288	\$129,016	\$555,846
FY90 Unpaid Pension Liability	+ 174,892	+ 237,555	+ 21,868	+ 155,710	+ 590,025
FY91 Unpaid Pension Liability	+ 233,645	+ 312,631	+ 20,523	+ 166,869	+ 733,668
FY92 Unpaid Pension Liability	+ 35,188	+ 98,941	+ 19,437	+ 95,249	+ 248,815
FY93 Unpaid Pension Liability	+ 48,895	+ 79,348	+ 8,376	+ 97,283	+ 233,902
FY94 Unpaid Pension Liability	<u>+ 51,944</u>	<u>+ 25,335</u>	<u>+ 1,787</u>	<u>+ 118,111</u>	<u>+ 197,176</u>
Total Unpaid Pension Liability (FY89 through FY94)	\$715,225	\$988,691	\$93,279	\$762,238	\$2,559,432
Normal Cost, 7/1/94	\$414,166	\$334,113	\$30,962	\$47,758	\$826,999
Amortization of 7/1/88					
Unfunded Actuarial Liability	+ 235,020	+ 331,608	+ 29,174	+ 160,553	+ 756,355
Amortization of FY89 loss (gain)	+ (17,462)	+ (15,314)	+ (1,714)	+ 0	+ (34,490)
Amortization of FY90 loss (gain)	+ 5,635	+ (2,479)	+ 488	+ (9,671)	+ (6,027)
Amortization of FY91 loss (gain)	+ (146,772)	+ (157,202)	+ (9,156)	+ (76,935)	+ (390,065)
Amortization of FY92 loss (gain)	+ 82,321	+ (24,056)	+ (4,579)	+ 16,706	+ 70,392
Amortization of FY93 loss (gain)	+ 2,000	+ (28,622)	+ (4,910)	+ 6,963	+ (24,568)
Amortization of FY94 loss (gain)	<u>+ (149,062)</u>	<u>+ (33,785)</u>	<u>+ 2,242</u>	<u>+ (66,508)</u>	<u>+ (247,113)</u>
Total Pension Expense, 7/1/94	\$425,846	\$404,263	\$42,507	\$78,866	\$951,482
Interest to 6/30/95	+ 34,068	+ 32,341	+ 3,401	+ 6,309	+ 76,119
Interest on Unpaid Pension Liab.	<u>+ 57,218</u>	<u>+ 79,095</u>	<u>+ 7,462</u>	<u>+ 60,979</u>	<u>+ 204,755</u>
Total Pension Expense, 6/30/95	\$517,131	\$515,700	\$53,370	\$146,154	\$1,232,355
Actual FY95 Contributions (includes Employee Contributions)	<u>- 650,630</u>	<u>- 558,486</u>	<u>- 50,279</u>	<u>- 97,416</u>	<u>- 1,356,811</u>
FY95 Unpaid Pension Liability	(\$133,499)	(\$42,786)	\$3,090	\$48,738	(\$124,457)
Total Unpaid Pension Liability (FY89 through FY95)	\$581,726	\$945,904	\$96,369	\$810,976	\$2,434,976

Note: Opinion #8 requires the development of a funding schedule according to the level dollar amortization method. The funding schedule established pursuant to c. 32, s. 22C is based on the increasing amortization payment method. This explains the existence of an unpaid pension liability under Opinion #8.

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**SECTION VI**

**ASSETS**

(000's omitted)

**A. Breakdown of Assets**

	STATE	TEACHERS
Investment in the Treasurer's Masters Trust (market value)	\$3,503,372	\$3,878,700
Investment in Massachusetts Technical Development Corp.	590	455
Investment in the Pension Reserve Investment Trust (market value)	<u>2,375,232</u>	<u>2,134,919</u>
<b>TOTAL</b>	<b><u>\$5,879,194</u></b>	<b><u>\$6,014,075</u></b>

**B. Breakdown of Assets by Fund**

Annuity Savings Fund	\$2,043,349	
Annuity Reserve Fund	617,381	
Military Service Fund	112	*
All Other Funds	<u>3,218,352</u>	
<b>Total</b>	<b><u>\$5,879,194</u></b>	<b><u>\$6,014,075</u></b>

**C. Assets for Boston Teachers**

For Boston Teachers, we assumed that the portion of total assets to be allocated is the same proportion as shown in the January 1, 1994 actuarial valuation report for the City of Boston, performed by PERA.

	Years of Service		
	1/01/94	7/01/94	1/01/95
Total City of Boston assets (Market Value)	\$1,460,526	\$1,450,059	\$1,463,377
Assets allocated to Boston Teachers	\$436,879	\$433,748	\$437,732

This information is normally included in the Annual Statement which must be submitted to PERA by May 15 of each year. However, the Teachers' Retirement System has been unable to complete this statement as of 12/31/94.

Years of Service	1994	1995	1996	1997	1998	1999	2000	2001
45-49	1,817	2,878	2,758	2,737	2,127	856	27	13,280
50-54	1,123	2,074	2,018	1,918	1,365	1,265	233	9,996
55-59	636	1,323	1,365	1,298	867	883	472	6,781
60-64	301	576	954	934	531	606	378	1,600
65+	65	351	522	460	240	282	304	2,254
<b>Total</b>	<b>18,853</b>	<b>22,799</b>	<b>17,168</b>	<b>12,407</b>	<b>6,261</b>	<b>3,987</b>	<b>1,354</b>	<b>82,929</b>

SECTION VII  
INFORMATION ON SYSTEM MEMBERSHIP

Part A - State Employees

A critical element of an actuarial valuation is accurate and up-to-date membership information. In recognition of this fact, PERA conducted an extensive review of existing data collection methods while also analyzing actual member information submitted as of 12/31/94 by **State Board of Retirement**.

State Active Members

If not indicated in the record, we assumed employees are full time, two thirds of the members are married with the male spouse three years older, and married members have two children. Veteran status was not available in about 3% of the records. In those cases, we assumed that 85% of these members were not veterans and 15% were veterans.

	<u>Actives</u>	<u>Vested Terms.</u>
Number of Members	82,929	1,565
Average Age	43.2	48.7
Average Service	10.4	14.5
Average Salary	\$35,438	\$34,218
Average Annuity Savings Fund Balance	\$23,655	\$31,512

Age by Service Distribution of Active Members

<i>Present Age</i>	<u>Years of Service</u>							<b>Total</b>
	<i>0 - 4</i>	<i>5 - 9</i>	<i>10 - 14</i>	<i>15 - 19</i>	<i>20 - 24</i>	<i>25 - 29</i>	<i>30 +</i>	
0-24	1,821	137						1,958
25-29	4,499	2,585	172					7,256
30-34	3,506	4,895	2,259	212				10,872
35-39	2,822	4,208	3,729	1,745	73			12,577
40-44	2,263	3,442	3,391	3,103	1,138	95		13,432
45-49	1,817	2,878	2,758	2,737	2,127	856	27	13,200
50-54	1,123	2,074	2,018	1,918	1,365	1,265	233	9,996
55-59	636	1,323	1,365	1,298	867	883	412	6,784
60-64	301	876	954	934	551	606	378	4,600
65 +	65	381	522	460	240	282	304	2,254
<b>Total</b>	18,853	22,799	17,168	12,407	6,361	3,987	1,354	82,929

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

State Active Members (continued)

Salary by Age Distribution of Active Members

<i>Present Age</i>	<i>Number of Participants</i>	<i>Total Salary</i>	<i>Average Salary</i>
0 - 24	1,958	\$44,032,843	\$22,489
25 - 29	7,256 1*	204,429,306 \$27,096	\$28,174 \$27,096
30 - 34	10,872 48*	351,257,523 1,349,051	\$32,308 \$28,105
35 - 39	12,577 163*	433,841,677 4,961,301	\$34,495 \$30,437
40 - 44	13,432 270*	494,014,868 9,803,321	\$36,779 \$36,309
45 - 49	13,200 405*	502,598,750 14,776,983	\$38,076 \$36,486
50 - 54	9,996 364*	384,307,567 12,974,883	\$38,446 \$35,645
55 - 59	6,784 170*	258,754,483 5,672,907	\$38,142 \$33,370
60 - 64	4,600 72*	176,377,164 1,992,667	\$38,343 \$27,676
65 +	2,254 72*	89,262,504 1,992,971	\$39,602 \$27,680
<b>Total</b>	82,929 1,565*	\$2,938,876,685 \$53,551,180	\$35,438 \$34,218

Total Employee Contributions made during 1994: \$205,745,759

\* Vested Terminated Members

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

State Retirees and Survivors

Retiree data had very few errors or missing information. In the few cases where assumptions were necessary, a best estimate was made based on the data available in that particular record.

	<i>Superannuation</i>	<i>Acc Dis</i>	<i>Ord Dis</i>	<i>Survivors</i>	<b>Total</b>
Number of	33,033	2,316	824	6,245	42,418
Average Age	71.9	63.1	67.2	71.7	71.3
Avg. Annual	\$12,431	\$17,282	\$11,241	\$6,677	\$11,826
Annuity	\$60,273,535	\$1,817,827	\$811,348	\$4,790,180	\$67,692,890
Pension from the State	328,353,122	37,943,163	8,094,098	35,540,474	409,930,857
Pension from other	<u>22,000,389</u>	<u>265,213</u>	<u>357,224</u>	<u>1,367,655</u>	<u>23,990,481</u>
<b>TOTAL</b>	<b>\$410,627,046</b>	<b>\$40,026,203</b>	<b>\$9,262,670</b>	<b>\$41,698,309</b>	<b>\$501,614,228</b>

SECTION VII  
 INFORMATION ON SYSTEM MEMBERSHIP  
**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

State Retirees and Survivors (continued)

Benefit by Age Distribution

<i>Present Age</i>	<i>Number of Members</i>	<i>Total Benefits</i>	<i>Average Benefits</i>
less than 40	161	\$2,119,458	\$13,164
40 - 44	277	3,451,537	\$12,460
45 - 49	714	10,489,457	\$14,691
50 - 54	1,012	14,948,037	\$14,771
55 - 59	2,143	30,553,868	\$14,258
60 - 64	4,735	72,402,249	\$15,291
65 - 69	8,283	122,928,835	\$14,841
70 - 74	9,204	111,717,355	\$12,138
75 - 79	7,464	68,308,084	\$9,152
80 - 84	4,780	37,049,079	\$7,751
85 - 89	2,513	19,283,698	\$7,674
90 +	1,132	8,362,571	\$7,387
<b>Totals</b>	<b>42,418</b>	<b>\$501,614,228</b>	<b>\$11,826</b>

0-24	921							921
25-29	3,435	418						4,053
30-34	1,794	1,981	426					4,201
35-39	1,489	1,811	1,591	543				5,355
40-44	1,635	2,338	2,157	3,326	2,427			11,956
45-49	1,197	1,976	1,922	2,270	6,455	4,308	3	18,084
50-54	524	1,097	1,123	1,335	3,958	5,345	761	11,923
55-59	140	417	540	824	1,311	1,743	1,627	6,247
60-64	44	177	230	305	587	664	881	2,918
65+	12	83	63	63	144	124	209	671
Total	11,125	10,421	8,191	8,343	12,673	12,229	3,481	68,169

SECTION VII  
INFORMATION ON SYSTEM MEMBERSHIP

Part B - Massachusetts Teachers

A critical element of an actuarial valuation is accurate and up-to-date membership information. In recognition of this fact, PERA conducted an extensive review of existing data collection methods while also analyzing actual member information submitted as of 12/31/94 by **Teachers' Board of Retirement**. Numerous corrections and additions to incomplete information was required. Progress in this effort has been realized, however, the work is ongoing.

Teachers' Active Members

About 1/4 of 1% of the active data was missing Date of Birth. In those few cases, we assumed the missing data was in the same pattern as the data which was present. These records were not included in the demographic tables on this and the following page. Unless otherwise indicated, we assumed all the employees are full time and two thirds of the members were assumed to be married with the male spouse three years older and married members were assumed to have two children. Veteran status was not available in over 75% of the records, and for those records we assumed that 85% of the members were not veterans and 15% were veterans.

	<u>Actives</u>	<u>Vested Terms.</u>
Number of Members	66,369	1,700
Average Age	45.5	48.0
Average Service	15.3	16.5
Average Salary	\$39,162	\$39,975
Average Annuity Savings	\$32,812	\$33,669
Fund Balance		

Age by Service Distribution of Teacher Active Members  
Years of Service

<u>Present Age</u>	<u>0 - 4</u>	<u>5 - 9</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>	<u>30 +</u>	<u>Total</u>
0-24	921							921
25-29	3,435	618						4,053
30-34	1,794	1,981	426					4,201
35-39	1,409	1,813	1,591	542				5,355
40-44	1,655	2,338	2,253	3,326	2,423	1		11,996
45-49	1,192	1,976	1,922	2,230	6,455	4,306	3	18,084
50-54	524	1,057	1,123	1,155	1,958	5,345	761	11,923
55-59	140	417	583	624	1,111	1,745	1,627	6,247
60-64	44	177	230	305	587	694	881	2,918
65 +	11	43	63	63	144	138	209	671
<b>Total</b>	<b>11,125</b>	<b>10,420</b>	<b>8,191</b>	<b>8,245</b>	<b>12,678</b>	<b>12,229</b>	<b>3,481</b>	<b>66,369</b>



SECTION VII  
INFORMATION ON SYSTEM MEMBERSHIP (Continued)

Teachers' Active Members (continued)

Salary by Age Distribution of Teacher Active Members

<i>Present Age</i>	<i>Number of Participants</i>	<i>Total Salary</i>	<i>Average Salary</i>
0 - 24	921	\$21,971,080	\$23,856
25 - 29	4,053	105,409,024	\$26,008
30 - 34	4,201	127,417,683	\$30,330
	14*	\$543,124	\$38,795
35 - 39	5,355	182,837,574	\$34,143
	114*	4,930,657	\$43,251
40 - 44	11,996	452,943,963	\$37,758
	375*	15,704,759	\$41,879
45 - 49	18,084	751,444,207	\$41,553
	556*	22,201,523	\$39,931
50 - 54	11,923	519,306,559	\$43,555
	407*	15,843,262	\$38,927
55 - 59	6,247	278,153,752	\$44,526
	171*	6,536,813	\$38,227
60 - 64	2,918	130,445,708	\$44,704
	46*	1,910,225	\$41,527
65 +	671	29,191,537	\$43,505
	17*	287,147	\$16,891
<b>Total</b>	66,369	\$2,599,121,087	\$39,162
	1,700*	\$67,957,510	\$39,975

Total Employee Contributions made during 1994: \$163,206,696

Vested Terminated Members

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

Teachers' Retirees and Survivors

Retiree data had very few errors or missing information. In the few cases where assumptions were necessary, a best estimate was made based on the data available in that particular record.

	<i>Superannuation</i>	<i>Acc Dis</i>	<i>Ord Dis</i>	<i>Survivors</i>	<b>Total</b>
Number of Members	24,960	245	489	2,719	28,413
Average Age	71.9	62.4	64.4	69.3	71.4
Avg. Annual Benefit	\$16,800	\$22,744	\$13,087	\$7,547	\$15,902
Annuity	\$64,034,274	\$398,039	\$734,506	\$3,012,507	\$68,179,326
Pension	<u>355,304,902</u>	<u>5,174,317</u>	<u>5,664,979</u>	<u>17,506,914</u>	<u>383,651,112</u>
<b>TOTAL</b>	\$419,339,176	\$5,572,356	\$6,399,485	\$20,519,421	\$451,830,438

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

Teachers' Retirees and Survivors (continued)

Benefit by Age Distribution

<i>Present Age</i>	<i>Number of Members</i>	<i>Total Benefits</i>	<i>Average Benefits</i>
less than 40	29	\$153,432	\$5,291
40 - 44	83	637,766	\$7,684
45 - 49	351	3,706,741	\$10,561
50 - 54	680	8,098,585	\$11,910
55 - 59	1,893	33,585,793	\$17,742
60 - 64	4,496	94,297,555	\$20,974
65 - 69	5,798	111,444,905	\$19,221
70 - 74	4,732	74,557,645	\$15,756
75 - 79	3,621	47,069,080	\$12,999
80 - 84	2,964	35,620,767	\$12,018
85 - 89	2,503	29,296,964	\$11,705
90 +	1,263	13,361,205	\$10,579
<b>Totals</b>	<b>28,413</b>	<b>\$451,830,438</b>	<b>\$15,902</b>

SECTION VII  
INFORMATION ON SYSTEM MEMBERSHIP (Continued)

Part C - Boston Teachers

A critical element of an actuarial valuation is accurate and up-to-date membership information. In recognition of this fact, PERA conducted an extensive review of existing data collection methods while also analyzing actual member information submitted as of 12/31/94 by the **Boston Board of Retirement**. Numerous corrections and additions to incomplete information was required. Progress in this effort has been realized, however, the work is ongoing.

Unless otherwise indicated, we assumed all employees are full time, that two thirds of the members were married with the male spouse three years older, and that married members have two children.

Boston Teachers- Active Members

	<u>Actives</u>	<u>Vested Terms.</u>
Number of Members	5,913	32
Average Age	45.8	56.9
Average Service	14.3	14.7
Average Salary	\$39,031	\$28,233
Average Annuity Savings Fund Balance	\$31,851	\$26,198

Age by Service Distribution of Boston Teacher Active Members

<u>Present Age</u>	<u>Years of Service</u>							<u>Total</u>
	<u>0 - 4</u>	<u>5 - 9</u>	<u>10 - 14</u>	<u>15 - 19</u>	<u>20 - 24</u>	<u>25 - 29</u>	<u>30 +</u>	
0-24	84	3	6					87
25-29	275	77	46					358
30-34	202	207	46	47	2			457
35-39	136	249	145	189	198	1		579
40-44	141	249	220	101	355	371	2	998
45-49	99	182	255	78	133	333	151	1,365
50-54	61	119	114	78	133	101	138	989
55-59	29	54	56	50	108	101	81	536
60-64	10	39	36	37	76	67	44	346
65 +	1	12	30	25	54	32	44	198
<b>Total</b>	<b>1,038</b>	<b>1,191</b>	<b>908</b>	<b>529</b>	<b>926</b>	<b>905</b>	<b>416</b>	<b>5,913</b>

SECTION VII  
INFORMATION ON SYSTEM MEMBERSHIP (Continued)

Boston Teachers- Active Members (continued)

Salary by Age Distribution of Boston Teacher Active Members

<i>Present Age</i>	<i>Number of Participants</i>	<i>Total Salary</i>	<i>Average Salary</i>
0 - 24	87	\$1,928,021	\$22,161
25 - 29	358	10,043,152	\$28,053
30 - 34	457	15,260,255	\$33,392
	1*	\$33,219	\$33,219
35 - 39	579	21,569,234	\$37,253
	2*	55,857	\$27,928
40 - 44	998	39,806,088	\$39,885
	2*	85,529	\$42,765
45 - 49	1,365	58,287,647	\$42,702
	4*	74,516	\$18,629
50 - 54	989	42,681,299	\$43,156
	2*	53,178	\$26,589
55 - 59	536	21,499,455	\$40,111
	6*	193,643	\$32,274
60 - 64	346	13,192,846	\$38,130
	6*	137,379	\$22,897
65 +	198	6,522,809	\$32,943
	9*	270,136	\$30,015
<b>Total</b>	5,913	\$230,790,806	\$39,031
	32*	\$903,457	\$28,233

Total Employee Contributions made during 1994:

\$15,010,712

\* Vested Terminated Members

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

**Boston Teachers- Retirees and Survivors**

Retiree data had very few errors or missing information. In the few cases where assumptions were necessary, a best estimate was made based on the data available in that particular record.

**Retirees and Survivors**

	<i>Superannuation</i>	<i>Acc Dis</i>	<i>Ord Dis</i>	<i>Survivors</i>	<b>Total</b>
Number of Members	1,995	56	40	221	2,312
Average Age	73.4	65.7	67.2	70.7	72.9
Avg. Annual Benefit	\$20,306	\$19,681	\$13,934	\$8,628	\$19,064
Annuity	\$5,921,071	\$69,215	\$55,666	\$270,961	\$6,316,913
Pension	<u>34,589,510</u>	<u>1,032,914</u>	<u>501,692</u>	<u>1,635,906</u>	<u>37,760,022</u>
<b>TOTAL</b>	\$40,510,581	\$1,102,129	\$557,358	\$1,906,867	\$44,076,935

**SECTION VII**  
**INFORMATION ON SYSTEM MEMBERSHIP (Continued)**

Boston Teachers- Retirees and Survivors (continued)

Benefit by Age Distribution

<i>Present Age</i>	<i>Number of Members</i>	<i>Total Benefits</i>	<i>Average Benefits</i>
less than 40	6	\$22,668	\$3,778
40 - 44	7	41,765	\$5,966
45 - 49	18	188,597	\$10,478
50 - 54	53	741,489	\$13,990
55 - 59	133	2,932,251	\$22,047
60 - 64	274	6,744,234	\$24,614
65 - 69	439	10,455,962	\$23,818
70 - 74	397	8,070,892	\$20,330
75 - 79	318	5,273,710	\$16,584
80 - 84	262	3,988,309	\$15,223
85 - 89	290	4,182,103	\$14,421
90 +	115	1,434,955	\$12,478
<b>Totals</b>	<b>2,312</b>	<b>\$44,076,935</b>	<b>\$19,064</b>

SECTION VIII  
VALUATION COST METHODS

Part A Actuarial Cost Method

The Actuarial Cost Method which was used to determine pension liabilities and costs for benefits payable under the State Employees' Contributory Retirement System, the Massachusetts Teachers' Retirement System, and for the Boston Teachers, for the year beginning January 1, 1995, is known as the Entry Age Normal Cost Method. Under this method the Normal Cost for each active participant on the valuation date is determined as the level percent of salary, which, if paid annually from the date the participant first became a member of the retirement system, would fully fund by retirement, death, disability or termination, the projected benefits which the participant is expected to receive. The Actuarial Liability for each participant is determined as the present value as of the valuation date of all projected benefits which the participant is expected to receive, minus the present value of future annual Normal Cost payments expected to be made to the fund. Since only active members have a Normal Cost, the Actuarial Liability for inactives, retirees and survivors is simply equal to the present value of all projected benefits. The sum of Normal Cost and Actuarial Liability for each participant is equal to the Normal Cost and Actuarial Liability for the Plan. The Unfunded Actuarial Liability is the Actuarial Liability minus current assets.

The Normal Cost for a participant will remain a level percent of salary for each year of participation except for changes in provisions of the Plan or the actuarial assumptions employed in projection of benefits and present value determinations. The Normal Cost for the entire system will also change due to addition of new participants or the retirement, death or termination of participants. The Actuarial Liability for a participant will increase each year to reflect the additional accrual of Normal Cost. It will also change if the Plan provisions or actuarial assumptions are changed.

Differences each year between the actual experience of the Plan and the experience projected by the actuarial assumptions are reflected by adjustments to the Unfunded Actuarial Liability. An experience difference which increases the Unfunded Actuarial Liability is called an Actuarial Loss and one which decreases the Unfunded Actuarial Liability is called an Actuarial Gain.

Part B Asset Valuation Method

Assets are at market value.

Part C Valuation Method for COLA

The costs and liabilities for the COLA were calculated for 67 systems for whom we had completed valuations using the same assumptions and cost method as were used in this report. Of this 67, 18 were valued as of 1/1/93 and 27 were valued as of 1/1/94. The results of these valuations were brought forward to 1/1/95, and then the COLA costs were extrapolated from the 1/1/95 totals of the individual valuations based upon numbers of members in each category (active, vested termination, retiree and survivor).



SECTION IX  
ACTUARIAL ASSUMPTIONS

<u>Rate of Investment Return</u>	8% per year
<u>Rate of Salary Increase</u>	6% per year
<u>Interest Rate credited to the Annuity Savings Fund</u>	5 1/2% per year
<u>Assumed Rate of Cost of Living Increases (COLA)</u>	3% per year

Mortality Rate

1971 Group Annuity Mortality Table with ages set back one year for non-disabled males and set back six years for non-disabled females. A one-year setback means that members are assumed to die at an age one year later than would be the case under the table with no setback. The purpose of this is to reflect the improvement in the mortality rate since pre-retirement and post-retirement benefits. For disabled members, the mortality rate is assumed to be in accordance with the 1971 Group Annuity Mortality Table set forward nine years for males and set forward four years for females. It is assumed that 55% of pre-retirement deaths are job-related for group 1 and 2 members and 90% are job-related for group 3 and 4 members. For members retired under an Accidental (job-related) Disability, it is assumed that 40% of deaths are from the same cause as the disability.

Rate of Withdrawal

Based on an analysis of past experience. Sample annual rates are shown below:

<u>Age</u>	<u>Teachers</u>	<u>Other Groups 1 &amp; 2</u>	<u>Groups 3 &amp; 4</u>
20	.0960	.1200	.0210
30	.0444	.0555	.0165
40	.0185	.0231	.0056
50	.0117	.0146	0

**SECTION IX**  
**ACTUARIAL ASSUMPTIONS (Continued)**

Based on an analysis of past experience. Sample annual rates are shown below:

Rate of Disability

Age	Teachers	Groups 1 & 2	Group 3	Group 4
20	0.0003	0.0006	0.0011	0.0010
30	0.0006	0.0011	0.0025	0.0023
40	0.0012	0.0024	0.0096	0.0087
50	0.0031	0.0061	0.0000	0.0110
60	0.0061	0.0123	0.0000	0.0150

It is also assumed that 55% of disabilities will be job-related.

Rate of Retirement (Superannuation)

Based on an analysis of past experience. Annual rates are shown below:

Age	Teachers	Groups 1 & 2	Group 3	Group 4
43		0.0000	0.0030	0.0000
44		0.0000	0.0050	0.0000
45		0.0000	0.0075	0.0000
46		0.0000	0.0105	0.0000
47		0.0000	0.0500	0.0000
48		0.0000	0.0500	0.0000
49		0.0000	0.1000	0.0000
50		0.0000	0.2000	0.3201
51		0.0000	0.2500	0.0718
52		0.0000	0.2500	0.0593
53		0.0000	0.2500	0.0803
54		0.0000	0.2500	0.0769
55		0.1255	1.0000	0.1554
56		0.0321	1.0000	0.0907
57		0.0310	1.0000	0.0909
58		0.0334	1.0000	0.1194
59		0.0348	1.0000	0.1136
60		0.0784	1.0000	0.2395
61		0.0692	1.0000	0.1360
62		0.1511	1.0000	0.1950
63		0.1071	1.0000	0.1253
64		0.1037	1.0000	0.1873
65		0.3568	1.0000	1.0000

**SECTION IX**  
**ACTUARIAL ASSUMPTIONS (Continued)**

Age	Teachers Groups 1 & 2	Group 3	Group 4
66	0.2214	1.0000	1.0000
67	0.2159	1.0000	1.0000
68	0.2164	1.0000	1.0000
69	0.2536	1.0000	1.0000
70	1.0000	1.0000	1.0000

Administrative Expenses

Assumed to be paid separately and are not included in the appropriation.

Assumptions made with respect to data are discussed in Section VII.

**CONTRIBUTIONS:** Member contributions vary depending on the most recent date of

5% of regular compensation

7% of regular compensation

8% of regular compensation

an additional 2% of regular compensation in excess of \$30,000.

**INTEREST:** Regular interest on regular deductions made after January 1, 1964 is a rate established by the Commissioner of PERA in consultation with the Commissioner of Banks. The rate is based on the average rates paid on individual savings accounts by a representative sample of 10 financial institutions.

**RETIREMENT AGE:** There is no mandatory retirement age for most employees. Certain public safety personnel are required to retire at age 55. Mandatory retirement age for state police officers is age 55, but the Commonwealth has been enjoined from enforcing this provision in conjunction with ongoing litigation.

Members over the age of 70 may elect to continue making contributions on regular compensation and continue to accrue additional years of creditable service.

SECTION X  
SUMMARY OF PLAN PROVISIONS

**ADMINISTRATION** : There are 106 contributory retirement systems for public employees in Massachusetts. Each system is governed by a retirement board and all boards, although operating independently, are governed by one retirement law, Chapter 32 of the Massachusetts General Laws. This law in general provides uniform benefits, uniform contribution requirements and a uniform accounting and funds structure for all systems.

**PARTICIPATION** : Participation is mandatory for all full-time employees. Eligibility with respect to part-time, provisional, temporary, seasonal or intermittent employment is governed by regulations promulgated by the retirement board, and approved by the Commissioner of PERA. Membership is optional for certain elected officials.

There are four classes of membership in the retirement system:

- Group 1 - General employees, including teachers, clerical, administrative, technical and all other employees not otherwise classified.
- Group 2 - Certain specified hazardous duty positions.
- Group 3 - State Police Officers and Inspectors.
- Group 4 - Police officers, firefighters, state correction officers and other hazardous positions specified in the statute.

**MEMBER CONTRIBUTIONS** : Member contributions vary depending on the most recent date of membership:

- Prior to 1975 - 5% of regular compensation
- 1975 - 1983 - 7% of regular compensation
- 1984 to present - 8% of regular compensation
- 1979 to present - an additional 2% of regular compensation in excess of \$30,000.

**RATE OF INTEREST** : Regular Interest on regular deductions made after January 1, 1984 is a rate established by the Commissioner of PERA in consultation with the Commissioner of Banks. The rate is obtained from the average rates paid on individual savings accounts by a representative sample of at least 10 financial institutions.

**RETIREMENT AGE** : There is no mandatory retirement age for most employees. Certain public safety personnel are required to retire at age 65. Mandatory retirement age for state police officers is age 55, but the Commonwealth has been enjoined from enforcing this provision in conjunction with ongoing litigation.

Members over the age of 70 may elect to continue making contributions on regular compensation and continue to accrue additional years of creditable service.

**SECTION X**  
**SUMMARY OF PLAN PROVISIONS (Continued)**

**SUPERANNUATION RETIREMENT** : A member is eligible for a superannuation retirement allowance (service retirement), upon meeting the following conditions:

- completion of 20 years of service, or
- attainment of age 55 if hired prior to 1978, or
- hired after 1978, with 10 years of service and age 55.

**AMOUNT OF BENEFIT** : A member's annual allowance is determined by multiplying average salary by a benefit rate related to the member's age and job classification at retirement, and the resulting product by his creditable service. For veterans as defined in G.L. c. 32, s. 1, there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years. The amount determined by the benefit formula cannot exceed 80% of the employees' highest three year average salary. (75% for Group 3 members)

Salary is defined as gross regular compensation.

Average Salary is the average annual rate of regular compensation received during the 3 consecutive years that produce the highest average, or, if greater, during the last three years (whether or not consecutive) preceding retirement.

The Benefit Rate varies with the member's retirement age, but the highest rate of 2.5% applies to Group 1 employees who retire at or after age 65, and to Group 4 employees who retire at or after age 55. A .1% reduction is applied for each year of age under the maximum age for the member's group.

For Group 3 members, the rate is 3 % for any age.

**DEFERRED VESTED BENEFIT** : A participant who has completed 10 or more years of creditable service is eligible for a deferred vested retirement benefit. Elected officials and others who were hired prior to 1978 may be vested after 6 years in accordance with G.L. c. 32, s. 10.

The participant's accrued benefit is payable commencing at age 55, or the completion of 20 years, or may be deferred until later at the participant's option.

**WITHDRAWAL OF CONTRIBUTIONS** : If a member is under age 55, member contributions may be withdrawn. Employees who first become members on or after January 1, 1984, may receive only limited interest on their contributions if they voluntarily terminate their service. Those who leave service with less than 5 years receive no interest; those who leave service with greater than 5 but less than 10 years receive 50% of interest.

SECTION X  
SUMMARY OF PLAN PROVISIONS (Continued)

**DISABILITY RETIREMENT:** The Massachusetts Retirement Plan provides 2 types of disability retirement benefits:

**Ordinary Disability:**

**Eligibility:** Non-veterans who become totally and permanently disabled by reason of a non-job related condition before attaining age 55 with at least 10 years of creditable service.

**Veteran's** with ten years of creditable service who become totally and permanently disabled by reason of a non-job related condition prior to reaching "maximum age".

**Retirement Allowance:** Equal to the accrued superannuation retirement benefit as if the member was age 55. If the member is a veteran, the benefit is 50% of the member's final rate of salary during the preceding 12 months, plus an annuity based upon accumulated member contributions plus credited interest. If the member is over age 55, he or she will receive not less than the superannuation allowance to which he or she is entitled.

**Accidental Disability:**

**Eligibility:** Applies to members who become permanently and totally incapacitated for further duty as a result of a personal injury sustained or hazard undergone while in the performance of duties. There are no minimum age or service requirements. The member must file his or her application prior to attaining statutory "maximum age."

**Retirement Allowance:** 72% of salary plus an annuity based on accumulated member contributions, with interest. This amount is not to exceed 100% of pay. (75% for members hired after 1987) There is an additional pension of \$486.72 per year, per child who is under 18 at the time of the member's retirement, with no age limitation if the child is mentally or physically incapacitated from earning. The additional pension may continue up to age 21 for any child who is a full time student at an accredited educational institution.

**ACCIDENTAL DEATH**

**Eligibility:** Applies to members who die as a result of a work-related injury or if the member was retired for accidental disability and the death was the natural and proximate result of the injury or hazard undergone on account of which such member was retired.

**SECTION X**  
**SUMMARY OF PLAN PROVISIONS (Continued)**

**Allowance:** An immediate payment to a named beneficiary equal to the accumulated deductions at the time of death, plus a pension equal to 72% of current salary and payable to the surviving spouse, dependent children or the dependent parent, plus a supplement of \$312 per year, per child, payable to the spouse or legal guardian until all dependent children reach age 18 or 21 if a full time student, unless mentally or physically incapacitated.

The surviving spouse of a member of a police department or fire department or any corrections officer who, under specific and limited circumstances detailed in the statute, suffers an accident and is killed or sustains injuries resulting in his death, may receive a pension equal to the maximum salary for the position held by the member upon his death. In addition, an eligible family member may receive a one time payment of \$100,000.00 from the State Retirement Board.

**DEATH AFTER ACCIDENTAL DISABILITY RETIREMENT**

If the member's death is from a cause unrelated to the condition for which the member received accidental disability benefits, the spouse will receive an annual allowance of \$3,000 until remarriage or death. (to be increased to \$6,000 effective January 17, 1996)

**DEATH IN ACTIVE SERVICE :**

**Eligibility:** At least 2 years of service

**Allowance:** An allowance equal to that which would have been payable had the member retired and elected Option C on the day before his or her death. For death occurring prior to the member's superannuation retirement age, the age 55 benefit rate is used. The minimum annual allowance payable to the surviving spouse of a member in service who dies with at least two years of creditable service is \$3,000, provided that the member and the spouse were married for at least one year and living together on the member's date of death.

The surviving spouse of such a member in service receives an additional allowance equal to the sum of \$1,440 per year for the first child and \$1,080 per year for each additional child.

**COST OF LIVING**

The first \$9,000 of a retiree's total allowance is subject to a cost-of-living adjustment related to a change of at least 3% in the Consumer Price Index. This benefit is subject to an annual vote of the Massachusetts General Court.

SECTION X  
SUMMARY OF PLAN PROVISIONS (Continued)

**METHODS OF PAYMENT**

A member may elect to receive his or her retirement allowance in one of 3 optional forms of payment.

**Option A:** Total annual allowance, payable in monthly installments, commencing at retirement and terminating at the member's death.

**Option B:** A reduced annual allowance, payable in monthly installments, commencing at retirement and terminating at the death of the member, provided, however, that if the total amount of the annuity portion received by the member is less than the amount of his or her accumulated deductions, including interest, the difference or balance of his accumulated deductions will be paid in a lump sum to the retiree's beneficiary or beneficiaries of choice.

**Option C:** A reduced annual allowance, payable in monthly installments, commencing at retirement. At the death of the retired employee, 2/3 of the allowance is payable to the member's designated beneficiary (who may be the spouse, or former spouse who remains unmarried for a member whose retirement becomes effective on or after February 2, 1992, child, parent, sister, or brother of the employee) for the life of the beneficiary. For members who retired on or after January 12, 1988, if the beneficiary pre-deceases the retiree, the benefit payable increases (or pops up) to the amount which would have been payable under Option A. Option C is not available to accidental disability recipients.

**ALLOCATION OF PENSION COSTS :** If a member's total creditable service was partly earned by employment in more than one retirement system, the cost of the "pension portion" is allocated between the different systems pro rata based on the member's service within each retirement system.



SECTION XI  
GLOSSARY OF TERMS

**ACTUARIAL ACCRUED LIABILITY** That portion of the Actuarial Present Value of pension plan benefits which is not provided by future Normal Costs or employee contributions. It is the portion of the Actuarial Present Value attributable to service rendered as of the Valuation Date.

**ACTUARIAL ASSUMPTIONS** Assumptions, based upon past experience or standard tables, used to predict the occurrence of future events affecting the amount and duration of pension benefits, such as: mortality, withdrawal, disablement and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; and any other relevant items.

**ACTUARIAL COST METHOD (or FUNDING METHOD)** A procedure for allocating the Actuarial Present Value of all past and future pension plan benefits to the Normal Cost and the Actuarial Accrued Liability.

**ACTUARIAL GAIN OR LOSS (or EXPERIENCE GAIN or LOSS)** A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions, during the period between two Actuarial Valuation dates.

Note: The effect on the Accrued Liability and/or the Normal Cost resulting from changes in the Actuarial Assumptions, the Actuarial Cost Method or pension plan provisions would be described as such, not as an Actuarial Gain (Loss).

**ACTUARIAL PRESENT VALUE** The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

**AMORTIZATION PAYMENT** That portion of the pension plan appropriation which represents payments made to pay interest on and the reduction of the Unfunded Accrued Liability.

**ANNUAL STATEMENT** The statement submitted to PERA each year that describes the asset holdings and Fund balances as of December 31 and the transactions during the calendar year that affected the financial condition of the retirement system.

**ANNUITY RESERVE FUND** The fund into which total accumulated deductions, including interest, is transferred at the time a member retires, and from which annuity payments are made.

**ANNUITY SAVINGS FUND** The fund in which employee contributions plus interest credited are held for active members and for former members who have not withdrawn their contributions and are not yet receiving a benefit (inactive members).

SECTION XI  
GLOSSARY OF TERMS (Continued)

**ASSETS** The value of securities as described in Section VIII.

**COST OF BENEFITS** The estimated payment from the pension system for benefits for the fiscal year. This is the minimum amount payable during the first six years of some Funding Schedules.

**EXPENSE FUND** The fund into which the appropriation for administrative expenses is paid and from which all such expenses are paid.

**FUNDING SCHEDULE** The schedule based upon the most recently approved actuarial valuation which sets forth the amount which would be appropriated to the pension system in accordance with Section 22D of M.G.L. Chapter 32.

**GASB** Governmental Accounting Standards Board

**NORMAL COST** Total Normal Cost is that portion of the Actuarial Present Value of pension plan benefits which is to be paid in a single fiscal year. The Employee Normal Cost is the amount of the expected employee contributions for the fiscal year. The Employer Normal Cost is the difference between the total Normal Cost and the Employee Normal Cost.

**PENSION BENEFIT OBLIGATION** The portion of the Actuarial Present Value attributable to past service in accordance with the Projected Unit Credit cost method as stipulated by GASB Statement Number 5.

**PENSION FUND** The fund into which appropriation amounts as determined by PERA are paid and from which pension benefits are paid.

**PENSION RESERVE FUND** The fund which shall be credited with all amounts set aside by a system for the purpose of establishing a reserve to meet future pension liabilities. These amounts would include excess interest earnings.

**SPECIAL FUND FOR MILITARY SERVICE CREDIT** The fund which is credited with amounts paid by the Commonwealth equal to the amount which would have been contributed by a member during a military leave of absence as if the member had remained in active service of the Commonwealth. In the event of retirement or a non-job related death, such amount is transferred to the Annuity Reserve Fund. In the event of termination prior to retirement or death, such amount shall be transferred to the Pension Fund.

**UNFUNDED ACCRUED LIABILITY** The excess of the Actuarial Accrued Liability over the Assets.