

**REPORT ON THE JANUARY 1, 2001  
ACTUARIAL VALUATION OF THE  
DANVERS CONTRIBUTORY  
RETIREMENT SYSTEM**

01/01, 2001

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## SECTION I - OVERVIEW

The Danvers Retirement Board has engaged Buck Consultants to prepare an actuarial valuation of the Retirement System as of January 1, 2001. Employee data and asset information as of this date were provided by the Retirement Board. The valuation was prepared pursuant to MGL Chapter 32, based upon the acceptance of Section 22D.

The purposes of the valuation are to:

- 1) analyze the current funded position of the System and determine the level of contributions necessary to assure sound funding;
- 2) update the Section 22D funding schedule currently in place for the Retirement System; and
- 3) provide reporting and disclosure information for financial statements, governmental agencies and other interested parties.

Section II provides a summary of the principal valuation results. Section VI provides a projection of the Section 22D funding amounts.

Respectfully Submitted,

BUCK CONSULTANTS, INC.

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David L. Driscoll, FSA, MAAA, EA  
Consulting Actuary

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Date

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Mitchell L. Barlas, ASA, MCA, MAAA, EA  
Principal and Consulting Actuary

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Date

## SECTION II - SUMMARY OF PRINCIPAL RESULTS

1. For convenience of reference, the principal results of the valuation as of January 1, 2001 are summarized below along with a comparison with the amounts in the previous valuation, which was prepared as of January 1, 1998.

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Valuation Date	January 1, 1998	January 1, 2001
Active members:		
Number	412	420
Annual compensation	\$13,763,498	\$15,110,384
Average age	46.6	45.7
Average service	13.5	12.6
Average compensation	\$33,407	\$35,977
Pensioners and beneficiaries:		
Number	404	415
Annual benefit payments <sup>1</sup>	\$3,604,787	\$4,878,367
Average benefit	\$8,923	\$11,755
Inactive members:		
Number	32	23
Accumulated employee contributions	\$383,869	\$325,301
Assets for valuation purposes	\$49,283,745	\$72,004,870
Unfunded accrued actuarial liability	\$20,693,562	\$14,827,959
Section 22D funding for fiscal 2002	\$3,036,849	\$3,036,849
Funded percentage	70.4%	82.9%

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<sup>1</sup> Benefit amounts exclude cost-of-living adjustments implemented after July 1, 1981 and prior to July 1, 1998.

2. A projection of Section 22D costs is presented in Section VI.
3. Schedule B of this report outlines the full set of actuarial assumptions and methods employed.
4. The provisions of the System are summarized in Schedule C. The valuation includes additional liabilities resulting from Chapter 17 COLA legislation.

### SECTION III - MEMBERSHIP DATA

1. In order to calculate the aggregate liabilities and assets on account of members of the System as of January 1, 2001, data were needed with respect to each active and retired member and beneficiary of the System. The data with respect to active, retired and terminated members and beneficiaries were provided to the actuary in electronic format by the Retirement Board.
  
2. From the data, tabulations were made showing, as of January 1, 2001, the number and annual compensation of members classified by age and years of service and the number and annual retirement allowances of retired members and beneficiaries as of January 1, 2001, classified by age. These tables are presented in Schedule D.
  
3. The following tables show the number of active and retired members of the Retirement System as of January 1, 2001.

#### TABLE I

THE NUMBER AND ANNUAL COMPENSATION  
OF ACTIVE MEMBERS  
AS OF JANUARY 1, 2001

GROUP	NUMBER	COMPENSATION
General Employees	301	\$ 9,048,203
Police and Fire	<u>119</u>	<u>\$ 6,062,181</u>
Total	420	\$ 15,110,384

**TABLE II**

THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES OF  
 RETIRED MEMBERS AND BENEFICIARIES  
 AS OF JANUARY 1, 2001

GROUP	<u>ANNUAL RETIREMENT ALLOWANCE</u>			TOTAL
	NUMBER	PENSION*	ANNUITY	
Service Retirements	351	\$3,508,298	\$512,320	\$4,020,618
Disability Retirements	28	\$480,092	\$41,836	\$521,928
Beneficiaries of Deceased Members	<u>36</u>	<u>\$314,067</u>	<u>\$21,754</u>	<u>\$335,821</u>
Grand Total	415	\$4,302,457	\$575,910	\$4,878,367

\* Pension amounts exclude cost-of-living adjustments applied after July 1, 1981, and prior to July 1, 1998, which are funded by the Commonwealth of Massachusetts.

In addition, there are 23 inactive members with estimated deferred benefits of \$325,301.

**SECTION IV - ASSETS**

1. The amount of assets taken into account in this valuation is based on financial information reported by the Retirement Board.
  
2. As of January 1, 2001, the market value of Retirement System assets amounted to \$72,004,870.
  
3. The actuarial value of assets for valuation funding purposes is the reported market value of \$72,004,870.

**SECTION V - COMMENTS ON VALUATION**

Schedule A of this report contains the results of the valuation, which show present and prospective assets and liabilities of the System as of January 1, 2001.

The schedule shows that the System has total actuarial liabilities of \$109,055,016, of which \$48,761,965 is for benefits payable on account of present retired members and beneficiaries, \$59,967,750 is for benefits payable on account of present active members, and \$325,301 is for benefits payable on account of present inactive members. Against these liabilities, there are anticipated future contributions by members of \$12,526,873 and future normal contributions of \$9,695,314 payable by the Town. Subtracting these amounts from the total actuarial liabilities leaves \$86,832,829 as the accrued actuarial liability. Against this amount there are present assets of \$72,004,870, which when subtracted from the accrued liability leaves \$14,827,959 as the unfunded actuarial accrued liability.

**SECTION VI - CONTRIBUTIONS PAYABLE UNDER THE SYSTEM**

Section 22D of MGL Chapter 32 outlines various requirements of a funding schedule that will amortize the unfunded actuarial liability and cover normal costs. The normal cost and unfunded actuarial liability are to be calculated in accordance with the entry age normal actuarial cost method. Amortization of the unfunded actuarial liability is to be based on a schedule that ends no later than the year 2028. The contribution toward amortization of the unfunded actuarial liability may increase by up to 4½% each year.

The following table presents a projection of contributions that meet the Section 22D requirements. The contributions were computed under the assumption that the contributions are paid on December 31. The normal cost is assumed to increase by 5½% annually while the unfunded accrued liability contribution is based on amortization of the unfunded liability in level annual installments. This schedule incorporates the funding required to provide annual COLAs under Chapter 17 of the Acts of 1997.

PENSION REFORM ACT - SECTION 22D  
FUNDING REQUIREMENTS

<b>Fiscal Year Ending In</b>	<b>Normal Cost</b>	<b>Amortization of Unfunded Actuarial Accrued Liability<sup>1</sup></b>	<b>Total Town Contribution</b>
2002	\$1,126,344	\$1,910,505	\$3,036,849
2003	1,188,293	1,910,505	3,098,798
2004	1,253,649	1,910,505	3,164,154
2005	1,322,600	1,910,505	3,233,105
2006	1,395,343	1,910,505	3,305,848
2007	1,472,087	1,910,505	3,382,592
2008	1,553,052	1,910,505	3,463,557
2009	1,638,470	1,910,505	3,548,975
2010	1,728,586	1,910,505	3,639,091
2011	1,823,658	1,910,505	3,734,163
2012	1,923,959	1,910,505	3,834,464
2013	2,029,777	1,910,505	3,940,282
2014	2,141,415	1,170,103	3,311,518
2015	2,259,193	0	2,259,193
2016	2,383,449	0	2,383,449
2017	2,514,539	0	2,514,539
2018	2,652,839	0	2,652,839
2019	2,798,745	0	2,798,745
2020	2,952,676	0	2,952,676
2021	3,115,073	0	3,115,073
2022	3,286,402	0	3,286,402
2023	3,467,154	0	3,467,154
2024	3,657,847	0	3,657,847
2025	3,859,029	0	3,859,029
2026	4,071,276	0	4,071,276
2027	4,295,196	0	4,295,196
2028	4,531,432	0	4,531,432
2029	4,780,661	0	4,780,661
2030	5,043,597	0	5,043,597
2031	5,320,995	0	5,320,995
2032	5,613,650	0	5,613,650
2033	5,922,401	0	5,922,401

<sup>1</sup> Because the System's appropriation for fiscal year 2002 had already been determined on the basis of the funding schedule presented in the prior valuation report, the amortization amounts shown here were developed so as to maintain the Town's contribution for fiscal year 2002 at the level shown in that schedule.

## SCHEDULE A - RESULTS OF THE VALUATION

As of January 1, 2001 (Reflecting Chapter 17 COLA Legislation)

1. Development of the Unfunded Actuarial Accrued Liability	
a. Present value of prospective benefits payable in respect of:	
Present retired members and beneficiaries	\$48,761,965
Present active members	59,967,750
Present inactive members	<u>325,301</u>
Total actuarial liabilities	\$109,055,016
b. Present value of future contributions by members	\$12,526,873
c. Present value of future normal costs by the Town	\$9,695,314
d. Accrued actuarial liability, a. - b. - c.	\$86,832,829
e. Assets	\$72,004,870
f. Unfunded accrued actuarial liability, d. - e.	\$14,827,959
g. Funded ratio, e. ÷ d.	82.9%
2. Development of Normal Cost for fiscal year ending June 30, 2002	
a. Total entry age normal cost, January 1, 2001	\$2,153,093
b. Expected member contributions, January 1, 2001	\$1,110,182
c. Town normal cost, January 1, 2001, a. - b.	\$1,042,911
d. Normal cost payable by Town, fiscal year 2002	\$1,126,344
e. Normal cost payable by employees, fiscal year 2002	\$1,198,996

**SCHEDULE B - ACTUARIAL ASSUMPTIONS AND METHODS**GENERAL EMPLOYEES

VALUATION INTEREST RATE: 8% per annum, compounded annually, net of administrative expenses.

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal and vesting, disability, death and service retirement are as follows:

Annual Rates of

Age	Withdrawal and Vesting	Disability*	Death		Service Retirement
			Male	Female	
25	7.6%	.09%	.05%	.03%	
30	7.2	.11	.06	.03	
35	6.2	.17	.09	.05	
40	5.2	.22	.12	.07	
45	3.9	.41	.22	.10	
50	2.6	.61	.39	.17	
55	1.3	.80	.61	.25	10.0%
60		.99	.92	.42	5.0
62		1.07	1.11	.52	25.0
65		1.19	1.56	.71	10.0
69			2.48	1.09	100.0

\* It is assumed that 50% of all disability retirements and deaths are due to accidents in the performance of duty.

SALARY INCREASES: Salaries were assumed to increase annually by 5½% .

COST-OF-LIVING ADJUSTMENTS: Retirement benefits were assumed to increase annually by 3%, up to a maximum of \$360.

DEATHS AFTER RETIREMENT: The 1983 Group Annuity Mortality (GAM) Table. For the period after disability retirement, special mortality tables are used.

SPOUSES: 85% of male employees and 45% of female employees are assumed to be married; wives are assumed to be four years younger than their husbands.

LOADING OR CONTINGENCY RESERVE: None.

ACTUARIAL COST METHOD: Entry age normal cost method.

POLICE AND FIRE

VALUATION INTEREST RATE: 8% per annum, compounded annually, net of administrative expenses.

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of disability, death and service retirement are as follows:

Annual Rates of

Age	Disability*	Death		Service Retirement
		Male	Female	
25	.17%	.05%	.03%	
30	.22	.06	.03	
35	.33	.09	.05	
40	.44	.12	.07	
45	.83	.22	.10	
50	1.21	.39	.17	10.0%
55	1.60	.61	.25	25.0
60		.92	.42	25.0
62		1.11	.52	5.0
65		1.56	.71	100.0

\* It is assumed that 90% of all disability retirements and deaths are due to accidents in the performance of duty.

SALARY INCREASES: Salaries were assumed to increase annually by 5½%.

COST-OF-LIVING ADJUSTMENTS: Retirement benefits were assumed to increase annually by 3%, up to a maximum of \$360.

DEATHS AFTER RETIREMENT: The 1983 Group Annuity Mortality (GAM) Table. For the period after disability retirement, special mortality tables are used.

SPOUSES: 85% of male employees and 45% of female employees are assumed to be married; wives are assumed to be four years younger than their husbands.

LOADING OR CONTINGENCY RESERVE: None.

ACTUARIAL COST METHOD: Entry age normal cost method.

## SCHEDULE C - SUMMARY OF SYSTEM PROVISIONS

### MEMBERSHIP

The Retirement System covers all employees of the Town of Danvers except teachers and elected officials and those employees in service at the time of its establishment who elected not to become members. Eligible employees in the Town who enter service on or after the date the System became operative for their classification may become members of the Retirement System on their own application.

### SUMMARY OF BENEFIT AND CONTRIBUTION PROVISIONS

A summary of the main benefit and contribution provisions of the Retirement System, as interpreted for the valuation, is presented below.

The terms “Group 1” and “Group 4” are used to denote “general employees” and “police and fire”, respectively.

### BENEFITS

Final Average Salary (FAS)	The average of a member’s 3 highest consecutive years’ compensation.
Superannuation Retirement	
Eligibility	Age 65 for Group 1; Age 55 for Group 4. Maximum retirement age is 70 for Group 1 and 65 for Group 4.
Allowance	2.5% per year of service times FAS. Veterans receive additional \$15 annually per year of service to a maximum of \$300 annually. Maximum total allowance is 80% of FAS.

Early Retirement

Eligibility 20 years of service.

Allowance Calculated as a superannuation retirement allowance (including veteran's benefits) except accrual rate is equal to 2.5% reduced by .1% for each year age at retirement is below either 65 for Group 1 or 55 for Group 4.

The minimum allowance after 30 years of service is equal to:

- (1) An annuity which is the actuarial equivalent of member's accumulated deductions; and
- (2) A pension equal to 1/3 of FAS and any veteran's benefits as described under superannuation retirement.

Vested Retirement

Eligibility 10 years of service. For certain involuntary terminations, this is reduced to 6 years.

Allowance A superannuation retirement allowance commencing at age 55 for Group 1 members and age 45 for Group 4 members or later, where the accrual rate is determined by the age of the member at the time the allowance commences.

Ordinary Disability

Eligibility For nonveterans, 10 years of service prior to age 55 for Group 1 members or age 45 for Group 4 members. For veterans, 10 years of service prior to maximum retirement age.

Allowance An immediate allowance equal to the age 55 rate for Group 1 members or age 45 rate for Group 4 members per year of service times FAS.

Veterans receive an allowance equal to:

- (1) An annuity which is the actuarial equivalent of their accumulated deductions; and

- (2) A pension which is the greater of 50% of current salary and the service retirement allowance to which they are eligible, if any.

#### Accidental Disability

Eligibility None.

Allowance An immediate allowance equal to:

- (1) An annuity which is the actuarial equivalent of the member's accumulated deductions; and
- (2) A pension equal to 72% of current salary; and
- (3) A supplement equal to \$450 per year per child under 21.

The maximum total allowance is 100% of current salary.

#### Accidental Death Benefit

Eligibility None.

Allowance An immediate allowance equal to:

- (1) A lump sum payment equal to the accumulated deductions at death; and
- (2) A pension equal to 72% of current salary and payable to the surviving spouse, dependent children, or the dependent parents; and
- (3) A supplement of \$312 per year per child payable to the spouse or legal guardian until all children reach age 21, unless handicapped.

The maximum total allowance is 100% of current salary.

#### Death in Active Service

Eligibility None.

Allowance An immediate allowance that would have been payable had the member retired and elected the 2/3 joint and survivor option on the day before his death. For death occurring prior

to the minimum superannuation retirement age, the age 55 and age 45 accrual rates are used, respectively, for Group 1 and Group 4 members.

For members with at least 2 years of service at death, the surviving spouse receives an additional allowance equal to the sum of \$960 per year for the first child and \$720 per year for each additional child.

The minimum allowance is \$140 per month. The maximum total allowance is 100% of salary at the date of death.

Normal Form of Benefit	Reduced modified cash refund annuity.
Optional Forms of Benefit	<ul style="list-style-type: none"> <li>(1) Life annuity.</li> <li>(2) Modified cash refund annuity.</li> <li>(3) 66-2/3% joint and survivor allowance.</li> </ul>
Return of Contribution	If no other benefit is payable upon termination, the member's accumulated deductions are returned.
Post-Retirement Adjustments	Up to 3% of the annual retirement allowance up to a maximum of \$360 annually.
Member Contributions	Members contribute a percentage of annual regular compensation in accordance with their respective dates of hire, as shown below:

<u>Date of Hire</u>	<u>Rate of Contribution</u>
Prior to January 1, 1975	5%
On or after January 1, 1975	7%
On or after January 1, 1984	8%
On or after July 1, 1996	9%

Members hired on or after January 1, 1979 contribute an additional 2% of compensation in excess of \$30,000.

**SCHEDULE D**

**MEMBERSHIP TABLES**

TABLE 1

**THE NUMBER AND ANNUAL COMPENSATION OF ACTIVE MEMBERS  
DISTRIBUTED BY FIFTH AGE AND SERVICE  
AS OF JANUARY 1, 2001**

Attained Age	Completed Years of Service																Total			
	0 to 4		5 to 9		10 to 14		15 to 19		20 to 24		25 to 29		30 to 34		35 to 39				40 & up	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
<i>Under 20</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>20 to 24</i>	12	304,184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	304,184
<i>25 to 29</i>	22	776,148	4	183,828	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	959,976
<i>30 to 34</i>	14	452,243	11	468,377	15	608,159	1	48,336	0	0	0	0	0	0	0	0	0	0	41	1,577,115
<i>35 to 39</i>	31	727,221	6	240,016	20	816,335	9	413,359	2	64,523	0	0	0	0	0	0	0	0	68	2,261,454
<i>40 to 44</i>	24	461,128	6	124,025	10	417,600	9	442,060	11	566,461	1	67,704	0	0	0	0	0	0	61	2,078,977
<i>45 to 49</i>	20	447,138	13	280,305	7	284,010	6	206,838	9	463,686	22	1,164,965	1	49,587	0	0	0	0	78	2,896,529
<i>50 to 54</i>	6	135,058	8	230,607	7	210,281	8	245,646	5	195,654	22	1,143,343	8	462,371	0	0	0	0	64	2,622,961
<i>55 to 59</i>	10	296,427	2	57,328	5	199,646	7	233,445	5	143,885	4	155,174	8	375,351	1	88,240	0	0	42	1,549,496
<i>60 to 64</i>	2	31,399	1	28,191	2	81,973	5	118,134	6	172,220	1	34,314	3	137,258	1	39,999	1	39,906	22	683,395
<i>65 to 69</i>	0	0	0	0	1	25,805	3	79,429	0	0	0	0	1	31,907	0	0	0	0	5	137,141
<i>70 &amp; up</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	39,156	1	39,156	1	39,156
<i>Total</i>	141	3,630,946	51	1,612,677	67	2,643,808	48	1,787,247	38	1,606,430	50	2,565,500	21	1,056,475	2	128,240	2	79,062	420	15,110,384



**TABLE 2**  
**THE NUMBER AND ANNUAL PENSIONS OF RETIRED MEMBERS**  
**DISTRIBUTED BY AGE AS OF JANUARY 1, 2001**

Age	Service Retirements		Disability Retirements		Beneficiaries	
	Number	Annual Pension	Number	Annual Pension	Number	Annual Pension
Under 20	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0
25 - 29	0	0	0	0	0	0
30 - 34	0	0	0	0	0	0
35 - 39	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0
45 - 49	0	0	0	0	3	27,654
50 - 54	5	83,069	4	103,277	0	0
55 - 59	25	469,520	3	68,698	4	41,085
60 - 64	37	461,800	3	69,873	3	61,121
65 - 69	75	1,349,661	4	89,197	7	55,347
70 - 74	72	779,670	9	119,995	8	75,744
75 - 79	60	457,895	4	61,520	3	19,729
80 - 84	35	188,728	1	9,367	1	7,049
85 - 89	28	182,999	0	0	4	29,487
90 - 94	13	43,651	0	0	3	18,605
95 - 99	1	3,625	0	0	0	0
100 and over	0	0	0	0	0	0
<b>Total</b>	<b>351</b>	<b>4,020,618</b>	<b>28</b>	<b>521,928</b>	<b>36</b>	<b>335,821</b>

**SCHEDULE E**  
**VALUATION RESULTS BY GROUP**  
**AS OF JANUARY 1, 2001**

Item	Town of Danvers	Housing Authority	School Lunch	Hospital	Electric	School	Water	Sewer	Total	
<b>Active members:</b>										
Number	249	9	15	0	38	85	23	1	420	
Annual compensation	10,489,069	308,316	240,621	0	1,696,066	1,533,822	803,185	39,305	15,110,384	
Average age	44.9	50.1	48.2	0.0	48.5	46.7	42.2	32.0	45.7	
Average service	14.2	10.4	9.4	0.0	16.7	6.5	13.7	12.0	12.6	
Average compensation	42,125	34,257	16,041	0	44,633	18,045	34,921	39,305	35,977	
Accumulated contributions	9,174,899	261,469	164,857	0	1,509,540	850,467	707,919	31,841	12,700,992	
<b>Pensioners and beneficiaries:</b>										
Number	318	3	29	6	21	18	17	3	415	
Annual benefit payments	3,895,129	50,243	119,528	37,200	359,759	155,624	225,071	35,813	4,878,367	
Average benefit	12,249	16,748	4,122	6,200	17,131	8,646	13,239	11,938	11,755	
<b>Inactive members:</b>										
Number	1	0	0	9	0	11	2	0	23	
Accumulated contributions	35,113	0	0	218,078	0	42,656	29,454	0	325,301	
Assets for valuation puposes	49,983,115	1,469,205	1,146,621	0	8,082,191	7,309,057	3,827,383	187,298	72,004,870	
Unfunded actuarial liability	10,293,020	302,553	236,124	0	1,664,365	1,505,154	788,173	38,570	14,827,959	
Funding for fiscal:										
	2002	2,108,069	61,965	48,359	0	340,871	308,264	161,422	7,899	3,036,849
	2003	2,151,070	63,229	49,346	0	347,825	314,552	164,715	8,061	3,098,798
	2004	2,196,438	64,562	50,387	0	355,161	321,186	168,189	8,231	3,164,154
	2005	2,244,302	65,969	51,485	0	362,900	328,185	171,854	8,410	3,233,105
	2006	2,294,798	67,453	52,643	0	371,065	335,569	175,721	8,599	3,305,848