

**TEACHERS RETIREMENT ASSOCIATION FUND**

**ACTUARIAL VALUATION REPORT**

**JULY 1, 1992**

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.T44ax  
1992

**MILLIMAN & ROBERTSON, INC.**

**DEC 17 1992 LCP&R**



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December 15, 1992

Legislative Commission on  
Pensions and Retirement  
55 State Office Building  
St. Paul, Minnesota 55155

RE: Teachers Retirement Association Fund

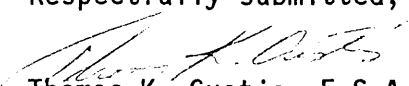
Commission Members:

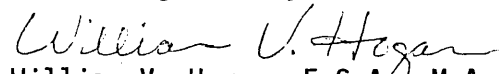
Pursuant to the terms of our Actuarial Services Contract, we have performed an actuarial valuation of the Fund as of July 1, 1992.

The results of our calculations are set forth in the following report, as are the actuarial assumptions upon which our calculations have been made. We have relied on the basic employee data and asset figures as submitted by the Teachers Retirement Association.

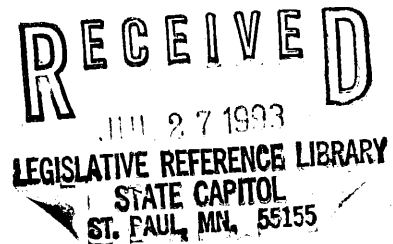
On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with the requirements of Section 356.215, Minnesota Statutes, and the requirements of the Standards for Actuarial Work, adopted by the Commission on July 8, 1992.

Respectfully submitted,

  
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Consulting Actuary

  
William V. Hogan, F.S.A., M.A.A.A.  
Actuary

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# TEACHERS RETIREMENT ASSOCIATION FUND

## TABLE OF CONTENTS

	<u>PAGE</u>
<u>REPORT HIGHLIGHTS</u>	1
<u>COMMENTARY</u>	
Purpose	2
Report Highlights	2
Asset Information	2
Actuarial Balance Sheet	3
GASB Disclosure	4
Actuarial Cost Method	5
Sources of Actuarial Gains and Losses	5
Contribution Sufficiency	6
Changes in Actuarial Assumptions	6
Changes in Plan Provisions	6
<u>ASSET INFORMATION</u>	
Table 1 - Accounting Balance Sheet	7
Table 2 - Change in Assets Available for Benefits	8
<u>MEMBERSHIP DATA</u>	
Table 3 - Active Members	9
Table 4 - Service Retirements	10
Table 5 - Survivors	11
Table 6 - Disability Retirements	12
Table 7 - Reconciliation of Members	13

## TEACHERS RETIREMENT ASSOCIATION FUND

### TABLE OF CONTENTS (Continued)

	<u>PAGE</u>
<u>FUNDING STATUS</u>	
Table 8 - Actuarial Balance Sheet	14
Table 9 - Determination of Unfunded Actuarial Accrued Liability (UAAL) and Supplemental Contribution Rate	15
Table 10 - Changes in Unfunded Actuarial Accrued Liability (UAAL)	16
Table 11 - Determination of Contribution Sufficiency	17
 <u>ACTUARIAL ASSUMPTIONS</u>	
Table 12 - Summary of Actuarial Assumptions and Methods	18
 <u>BASIC</u>	
<u>Membership Data</u>	
Table 3A - Active Members as of June 30, 1992	22
Table 4A - Service Retirements as of June 30, 1992	23
Table 5A - Survivors as of June 30, 1992	24
Table 6A - Disability Retirements as of June 30, 1992	25
 <u>Funding Status</u>	
Table 11A- Determination of Contribution Sufficiency	26
 <u>Plan Provisions</u>	
Table 13A- Summary of Plan Provisions	27
 <u>COORDINATED</u>	
<u>Membership Data</u>	
Table 3B - Active Members as of June 30, 1992	33
Table 4B - Service Retirements as of June 30, 1992	34
Table 5B - Survivors as of June 30, 1992	35
Table 6B - Disability Retirements as of June 30, 1992	36

**TEACHERS RETIREMENT ASSOCIATION FUND**

**TABLE OF CONTENTS**  
**(Continued)**

	<b><u>PAGE</u></b>
<b><u>Funding Status</u></b>	
Table 11B- Determination of Contribution Sufficiency	37
<b><u>Plan Provisions</u></b>	
Table 13B- Summary of Plan Provisions	38

# TEACHERS RETIREMENT ASSOCIATION FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/91 Valuation</u>	<u>07/01/92 Valuation</u>
<b>A. CONTRIBUTIONS (Table 11)</b>		
1. Statutory Contributions - Chapter 353 % of Payroll	12.76%	12.72%
2. Required Contributions - Chapter 356 % of Payroll	13.04%	13.13%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-0.28%	-0.41%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$5,614,924	\$6,324,733
b. Current Benefit Obligations (Table 8)	\$6,536,973	\$6,996,540
c. Funding Ratio: (a/b)	85.89%	90.40%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$5,614,924	\$6,324,733
b. Actuarial Accrued Liability (Table 9)	\$7,213,720	\$7,662,522
c. Funding Ratio: (a/b)	77.84%	82.54%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$9,070,387	\$9,524,675
b. Current and Expected Future Benefit Obligations	\$9,195,099	\$9,709,123
c. Funding Ratio: (a/b)	98.64%	98.10%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	65,093	65,557
b. Projected Annual Earnings	\$2,044,754	\$2,112,401
c. Average Annual Earnings (Actual \$)	\$31,413	\$32,222
d. Average Age	42.7	42.8
e. Average Service	12.1	12.3
2. Others		
a. Service Retirements (Table 4)	16,851	17,863
b. Disability Retirements (Table 5)	280	297
c. Survivors (Table 6)	955	1,049
d. Deferred Retirements (Table 7)	3,134	3,548
e. Terminated Other Non-vested (Table 7)	15,173	15,447
f. Total	36,393	38,204

## TEACHERS RETIREMENT ASSOCIATION FUND

### COMMENTARY

#### Purpose

The purpose of this valuation is to determine the financial status of the Plan. In order to achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by Section 356.215 of Minnesota Statutes.

#### Report Highlights

The financial status of the Plan can be measured by three different funding ratios:

The Accrued Benefit Funding Ratio is a measure of current funding status and, when viewed over a period of years, presents a view of the funding progress. It is based upon benefits which have been earned by service to the valuation date. This year's ratio is 90.40%. The corresponding ratio for the prior year was 85.89%.

The Accrued Liability Funding Ratio is also a measure of funding status and funding progress. It is based on the actuarial cost method that has historically been used by the State. For 1992 the ratio is 82.54%, which is an increase from the 1991 value of 77.84%.

The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 98.10% shows that the current statutory contributions are inadequate.

### Asset Information (Tables 1 and 2)

Minnesota Statutes require that the asset value used for actuarial purposes recognize only a third of the unrealized gains and losses. This requirement exists because market values (which include all unrealized gain and losses) are typically volatile and can produce erratic changes in the contribution requirements from year to year.

The calculation of the Actuarial Value of Assets is shown in Table 1 on lines F1 to F6. It combines the cost value of the Assets Available for Benefits and one-third of the difference between the market value and cost value of those assets.

The term "Actuarial Value of Assets" is used to indicate that the value was determined for use in this actuarial valuation. Since Minnesota Statutes refer to this value as "Current Assets", the latter phrase will be used in the remainder of this report.

This Plan participates in the Minnesota Post Retirement Investment Fund (i.e. MPRIF). After the MPRIF liability has been calculated for each participating Plan, the State Board of Investments, (i.e. SBI), will determine each Plan's portion of the excess earnings for the January benefit increase as well as the Plan's allocated market share of MPRIF.

### Actuarial Balance Sheet (Table 8)

An actuarial balance sheet provides a method for evaluating current and future levels of funding.

The Current Benefit Obligation used to measure current funding levels is calculated in accordance with Statement No. 5 of the Governmental Accounting Standards Board (GASB). Those requirements are:

For Active Members - salary and service are projected to retirement to determine benefits for each member and the ratio of credited service to



total service establishes the portion of the projected benefit to be used in calculating the current funding level.

For Non-active Members - the discounted value of benefits, including augmentation in cases where benefits have not commenced.

#### GASB Disclosure

The Current Benefit Obligation amounts in Table 8 are required to be disclosed by Statement No. 5 of the Governmental Accounting Standards Board (GASB). However, Statement No. 5 uses the terms "Actuarial Present Value of Credited Projected Benefits" and "Pension Benefit Obligation" rather than "Current Benefit Obligation".

The July 1, 1992 Pension Benefit Obligation reported in Table 8 is reformatted for GASB reporting purposes in the following table:

Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$2,800,039,000
Current Employees	
Accumulated employee contributions including allocated investment income	\$1,889,509,000
Employer-financed vested	2,067,561,000
Employer-financed nonvested	239,431,000
	-----
Total Pension Benefit Obligation	\$6,996,540,000
Net Assets Available for Benefits at Cost	\$6,240,491,000
Total Benefit Obligation less Assets	\$756,049,000
Funded Ratio	89.19%

### Actuarial Cost Method (Table 9)

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal Actuarial Cost Method. The primary characteristic of this method is that it allocates costs as a level percentage of payroll.

A comparison of this actuarial method (Table 9) to the actuarial balance sheet (Table 8) illustrates the two techniques for allocating liabilities of active Members to past and future. As noted in the prior section, the balance sheet allocates benefits and the corresponding liabilities, on the basis of service. The method used in Table 9 allocates liabilities so that the cost each year will be a constant percentage of payroll. Both approaches, however, calculate the value of all future benefits the same way (see line F of Table 8 and line A6, column 1, of Table 9).

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal Actuarial Cost Method by comparing the liabilities allocated to past service (Actuarial Accrued Liability) to the Current Assets. This amount, line B3, is funded over the remaining years to the amortization date by a series of payments that remain a constant percentage of payroll each year.

The payments will increase 6.5% each year because that is the assumed rate of increase in payroll. Although the payment schedule will be adequate to amortize the existing unfunded, the lower payments in the earlier years will not be sufficient to cover the interest on the unfunded liability. After a few years, the annual payment will cover the interest and also repay a portion of the unfunded.

### Sources of Actuarial Gains and Losses (Table 10)

The assumptions used in making the calculations using the Entry Age Normal Actuarial Cost Method are based on long-term expectations. Each year the actual experience will deviate from the long-term expectation. For a detailed analysis of the major components, refer to Table 10.

### Contribution Sufficiency (Table 11)

This report determines the adequacy of Statutory Contributions by comparing the Statutory Contributions to the Required Contributions.

The Required Contributions, set forth in Chapter 356, consist of:

Normal costs based on the Entry Age Normal Actuarial Cost Method.

A Supplemental Contribution for amortizing any Unfunded Actuarial Accrued Liability.

An Allowance for Expenses.

Table 11 shows the Plan has a contribution deficiency since the Statutory Contribution Rate is 12.72% compared to the Required Contribution Rate of 13.13%.

### Changes in Actuarial Assumptions

The actuarial assumptions are the same as those used in the prior valuation.

Paragraph X.1.4 of the Actuarial Standards requires that the Actuarial Present Value of Compensation for purposes of determining the Normal Cost of the Fund be calculated assuming mid-year payments. Previously, beginning of year payments were assumed. This change in methodology results in an increase of 0.73% of payroll in the Normal Cost and in the Contribution Deficiency of the Fund.

### Changes in Plan Provisions

There were no changes in plan provisions since the prior valuation which impacted funding costs.

TABLE 1

## TEACHERS RETIREMENT ASSOCIATION FUND

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS		
1. Cash, Equivalents, Short-term Securities	\$5,752	\$5,752
2. Investments		
a. Fixed Income	1,128,408	1,097,174
b. Equity	2,746,479	2,524,987
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	2,587,979	2,587,979
4. Other	30,651	30,651
	-----	-----
B. TOTAL ASSETS	\$6,499,269	\$6,246,543
	=====	=====
C. AMOUNTS CURRENTLY PAYABLE	\$6,052	\$6,052
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$886,618	\$886,618
2. Employer Reserves	3,018,620	2,765,894
3. MPRIF Reserves	2,587,979	2,587,979
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	\$6,493,217	\$6,240,491
	-----	-----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	\$6,499,269	\$6,246,543
	=====	=====
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$6,240,491
2. Market Value (D5)	\$6,493,217	
3. Cost Value (D5)	6,240,491	
	-----	
4. Market Over Cost: (F2-F3)	\$252,726	
5. 1/3 of Market Over Cost: (F4)/3		84,242
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		\$6,324,733
		=====

TEACHERS RETIREMENT ASSOCIATION FUND  
CHANGE IN ASSETS AVAILABLE FOR BENEFITS  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1992

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$5,818,210	\$5,513,281
B. OPERATING REVENUES		
1. Member Contributions	\$91,506	\$91,506
2. Employer Contributions	162,370	162,370
3. Investment Income	509,636	509,636
4. MPRIF Income	203,329	203,329
5. Net Realized Gain (Loss)	0	0
6. Other	1,943	1,943
7. Net Change in Unrealized Gain (Loss)	(52,203)	0
	-----	-----
8. Total Revenue	\$916,581	\$968,784
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$220,353	\$220,353
2. Disability Benefits	3,399	3,399
3. Survivor Benefits	3,315	3,315
4. Refunds	5,495	5,495
5. Expenses	8,236	8,236
6. Other	776	776
	-----	-----
7. Total Disbursements	241,574	241,574
	-----	-----
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	\$6,493,217	\$6,240,491
	=====	=====

## TEACHERS RETIREMENT ASSOCIATION FUND

## ACTIVE MEMBERS AS OF JUNE 30, 1992

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,510	158							1,668
25-29	2,447	3,253	531						6,231
30-34	1,229	2,223	2,676	441	1				6,570
35-39	1,413	1,780	1,649	2,869	620				8,331
40-44	1,625	2,190	1,805	1,899	4,121	1,502			13,142
45-49	932	1,537	1,387	1,283	1,738	4,630	851		12,358
50-54	488	652	824	786	1,021	2,301	2,512	497	9,081
55-59	220	397	312	348	563	1,005	1,339	1,562	5,746
60-64	108	172	104	134	198	446	443	487	2,092
65+	51	70	23	17	24	58	48	47	338
ALL	10,023	12,432	9,311	7,777	8,286	9,942	5,193	2,593	65,557

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	16,639	21,880							17,135
25-29	12,324	22,185	26,442						18,675
30-34	10,976	21,699	27,748	30,358	22,787				22,738
35-39	10,577	21,224	28,496	32,468	37,040				25,907
40-44	10,158	21,445	29,660	34,467	38,279	40,173			30,479
45-49	9,530	18,409	29,651	35,086	39,631	42,226	43,634		34,377
50-54	7,972	17,655	27,415	33,419	39,458	44,189	43,913	45,034	37,321
55-59	8,279	13,104	22,859	31,891	38,868	43,335	44,540	46,099	38,694
60-64	6,652	8,694	21,140	29,282	37,234	43,323	44,158	45,725	36,740
65+	5,098	4,564	20,113	31,877	37,005	44,198	48,472	47,674	28,411
ALL	11,553	20,546	28,174	33,283	38,625	42,543	44,092	45,853	30,252

PRIOR FISCAL YEAR EARNINGS (IN MILLIONS) BY YEARS OF SERVICE									
AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL	115	255	262	258	320	422	228	118	1,983

TABLE 4

## TEACHERS RETIREMENT ASSOCIATION FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1992

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1	4					5
50-54	7	8	2					17
55-59	513	633	7	2				1,155
60-64	663	1,706	1,193	4				3,566
65-69	199	1,221	2,113	382	1			3,916
70-74	19	242	1,660	1,084	176	2		3,183
75-79		14	230	1,454	680	94	1	2,473
80-84	1	2	6	131	1,514	214	57	1,925
85+				5	346	955	317	1,623
ALL	1,402	3,827	5,215	3,062	2,717	1,265	375	17,863

## AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1,442	783					915
50-54	14,859	10,757	956					11,293
55-59	19,680	15,177	13,526	1,112				17,143
60-64	16,411	16,419	18,020	10,199				16,947
65-69	13,971	13,029	16,132	9,025	12,058			14,361
70-74	8,753	11,850	13,365	11,994	6,671	12,127		12,385
75-79		7,987	12,795	12,007	10,628	4,684	10,772	11,400
80-84	626	3,260	2,320	10,260	9,737	4,856	5,292	9,065
85+				7,997	8,084	6,107	7,758	6,857
ALL	17,138	14,790	15,500	11,540	9,552	5,799	7,391	13,036

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	24,028	56,601	80,833	35,336	25,953	7,336	2,772	232,862

TABLE 5

## TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1992

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	2	6	3	1		2	1	15
50-54	11	13	5	1		1		31
55-59	12	39	20	6	3	1		81
60-64	6	49	74	23	5	4	3	164
65-69	3	43	108	58	8	2	1	223
70-74	1	14	80	91	24	7	6	223
75-79			20	129	54	8	8	219
80-84			1	11	41	5	3	61
85+				2	4	14	12	32
ALL	35	164	311	322	139	44	34	1,049

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,003	5,222	5,704	3,724		3,171	1,958	4,965
50-54	10,551	11,984	7,655	15,064		2,967		10,586
55-59	10,233	9,821	13,305	10,441	4,700	7,529		10,571
60-64	7,346	10,400	14,506	11,044	8,460	2,735	2,427	11,840
65-69	7,724	10,533	12,938	12,148	8,197	7,093	2,378	11,929
70-74	12,726	9,377	11,265	11,882	12,138	4,873	3,614	11,093
75-79			8,115	13,548	11,388	5,000	2,973	11,821
80-84			11,626	9,754	8,694	6,581	4,620	8,560
85+				2,167	8,436	6,776	6,494	6,591
ALL	9,510	10,146	12,436	12,363	10,205	5,543	4,379	11,112

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	333	1,664	3,868	3,981	1,419	244	149	11,657



TABLE 6

## TEACHERS RETIREMENT ASSOCIATION FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1992

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	5	28	9	3				45
50-54	5	27	14	8	1			55
55-59	14	54	23	5	3	1		100
60-64	7	38	29	14	1	1		90
65-69		3	1	2	1			7
70-74								
75-79								
80-84								
85+								
ALL	31	150	76	32	6	2		297

## AVERAGE ANNUAL BENEFIT

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50	3,949	5,958	5,853	16,260				6,401
50-54	10,000	9,950	9,006	6,229	2,210			9,033
55-59	16,807	12,984	9,733	9,428	4,781	5,680		12,275
60-64	12,826	15,123	12,099	15,087	15,062	8,455		13,890
65-69		17,104	19,066	11,591	3,385			13,850
70-74								
75-79								
80-84								
85+								
ALL	12,737	11,751	10,166	11,880	5,834	7,068		11,311

<u>TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED</u>								
<u>AGE</u>	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>ALL</u>
ALL	395	1,763	773	380	35	14		3,359

TABLE 7

## TEACHERS RETIREMENT ASSOCIATION FUND

## RECONCILIATION OF MEMBERS

		Terminated	
		Deferred Retirement	Other Non-Vested
		Actives	
A.	ON JUNE 30, 1991	65,093	3,134 15,173
B.	ADDITIONS	6,546	619 3,575
C.	DELETIONS		
1.	Service Retirement	(1,215)	(173) 0
2.	Disability	0	0 0
3.	Death	(69)	(32) 0
4.	Terminated - Deferred	(3,882)	0 0
5.	Terminated - Refund	(894)	0 (1,142)
6.	Terminated - Other Non-Vested	0	0 (889)
7.	Returned as Active	0	0 (1,270)
8.	Transferred	(45)	0 0
D.	DATA ADJUSTMENTS	23	0 0
	Vested	49,077	
	Non-Vested	16,480	
E.	TOTAL ON JUNE 30, 1992	65,557	3,548 15,447

		Recipients	
		Retirement Annuitants	Disabled Survivors
A.	ON JUNE 30, 1991	16,851	280 955
B.	ADDITIONS	1,407	64 145
C.	DELETIONS		
1.	Service Retirement	0	(20) 0
2.	Death	(413)	(17) (10)
3.	Annuity Expired	(1)	0 (55)
4.	Returned as Active	0	(12) 0
D.	DATA ADJUSTMENTS	19	2 14
E.	TOTAL ON JUNE 30, 1992	17,863	297 1,049

## TEACHERS RETIREMENT ASSOCIATION FUND

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

A.	CURRENT ASSETS (TABLE 1, F6)			\$6,324,733
B.	EXPECTED FUTURE ASSETS			
1.	Present Value of Expected Future Statutory Supplemental Contributions			\$1,153,341
2.	Present Value of Future Normal Costs			2,046,601
3.	Total Expected Future Assets			<u>\$3,199,942</u>
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			<u>\$9,524,675</u>
D.	CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>
1.	Benefit Recipients			
a.	Retirement Annuities		\$2,517,079	\$2,517,079
b.	Disability Benefits		47,511	47,511
c.	Surviving Spouse and Child Benefits		98,154	98,154
2.	Deferred Retirements With Future Augmentation		113,899	113,899
3.	Former Members Without Vested Rights		23,395	23,395
4.	Active Members			
a.	Retirement Annuities	10,608	3,821,450	3,832,058
b.	Disability Benefits	159,505	0	159,505
c.	Survivor's Benefits	68,334	0	68,334
d.	Deferred Retirements	984	111,870	112,854
e.	Refund Liability Due to Death or Withdrawal	0	23,751	23,751
5.	Total Current Benefit Obligations	<u>\$239,431</u>	<u>6,757,109</u>	<u>\$6,996,540</u>
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$2,712,583</u>
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$9,709,123</u>
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			<u>\$671,807</u>
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			\$184,448

## TEACHERS RETIREMENT ASSOCIATION FUND

DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
AND SUPPLEMENTAL CONTRIBUTION RATE  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)			
1. Active Members			
a. Retirement Annuities	\$6,321,100	\$1,683,512	\$4,637,588
b. Disability Benefits	261,401	103,890	157,511
c. Survivor's Benefit	110,343	34,578	75,765
d. Deferred Retirements	171,717	113,728	57,989
e. Refunds Due to Death or Withdrawal	44,524	110,893	(66,369)
f. Total	\$6,909,085	\$2,046,601	\$4,862,484
2. Deferred Retirements With Future Augmentation	113,899		113,899
3. Former Members Without Vested Rights	23,395		23,395
4. Annuitants in MPRIF	2,587,979		2,587,979
5. Recipients Not in MPRIF	74,765		74,765
6. Total	\$9,709,123	\$2,046,601	\$7,662,522
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$7,662,522
2. Current Assets (Table 1, F6)			6,324,733
3. UAAL (B1-B2)			\$1,337,789
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			\$44,530,546
2. Supplemental Contribution Rate (B3/C1)			3.00%

TEACHERS RETIREMENT ASSOCIATION FUND  
CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1992

A.	UAAL AT BEGINNING OF YEAR	\$1,598,796
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1.	Normal Cost and Expenses	\$185,156
2.	Contribution	(253,875)
3.	Interest on A, B1 and B2	132,977
		-----
4.	Total (B1+B2+B3)	\$64,258
		-----
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	\$1,663,054
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1.	Salary Increases	(\$195,050)
2.	Investment Return	(213,709)
3.	MPRIF Mortality	(4,511)
4.	Mortality of Other Benefit Recipients	(116)
5.	Other Items	88,121
		-----
6.	Total	(\$325,265)
		-----
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D6)	\$1,337,789
F.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	0
G.	CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	0
		-----
H.	UAAL AT END OF YEAR (E+F+G)	\$1,337,789
		=====

TEACHERS RETIREMENT ASSOCIATION FUND  
DETERMINATION OF CONTRIBUTION SUFFICIENCY  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.54%	\$95,950
2. Employer Contributions	8.18%	172,842
3. Total	----- 12.72% =====	----- \$268,792 =====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	8.03%	\$169,688
b. Disability benefits	0.49%	10,327
c. Survivors	0.17%	3,637
d. Deferred Retirement Benefits	0.53%	11,198
e. Refunds Due to Death or Withdrawal	0.51%	10,768
f. Total	----- 9.73% -----	----- \$205,618 -----
2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	3.00%	63,372
3. Allowance for Expenses	0.40%	8,450
4. Total	----- 13.13%	----- \$277,440
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) (A3-B4)	-0.41%	(\$8,648)

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1992  
is \$2,112,401.

**TEACHERS RETIREMENT ASSOCIATION FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

**Interest:**                      **Pre-Retirement:**    8.5% per annum  
                                       **Post-Retirement:**   5.0% per annum

**Salary Increases:**            Reported salary for prior fiscal year, with new hires annualized, increased 6.5% to current fiscal year and 6.5% annually for each future year.

**Mortality:**                    **Pre-Retirement:**  
                                       Male    -        1971 Group Annuity Mortality Table set back eight years  
                                       Female -        1971 Group Annuity Mortality Table set back eight years

**Post-Retirement:**  
                                       Male    -    Same as above  
                                       Female -    Same as above

**Post-Disability:**  
                                       Male    -    Same as above  
                                       Female -    Same as above

**Retirement Age:**            Age 62 or if over age 62, one year from valuation date. In addition, 45% of Basic Members and 30% of Coordinated Members are assumed to retire each year that they are eligible for the Rule of 90.

**Separation:**                    Select and ultimate rates were based on plan experience as of June 30, 1989. Ultimate rates after the third year are shown in rate table. Select rates are as follows:

	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>
Less than 35	.3	.15	.1
35-44	.25	.125	.08
45-60	.3	.15	.1

TABLE 12  
(Continued)

TEACHERS RETIREMENT ASSOCIATION FUND  
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Disability:	Rates as shown in table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll.
Return of Contributions:	All employees withdrawing after becoming eligible for a deferred benefit were assumed to take the larger of their contributions accumulated with interest or the value of their deferred benefit.
Family Composition:	85% of male Members and 65% of female Members are assumed to be married. Female is three years younger than male. Assume Members have no children.
Social Security:	N/A
Benefit Increases After Retirement:	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
Special Consideration:	Married Members assumed to elect subsidized joint and survivor form of annuity as follows:  Males - 15% elect 50% J&S option 50% elect 100% J&S option  Females - 10% elect 50% J&S option 10% elect 100% J&S option
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method with normal costs expressed as a level percentage of earnings. Under this method, Actuarial Gains (Losses) reduce (increase) the Unfunded Actuarial Accrued Liability.
Asset Valuation Method:	Cost Value plus one-third Unrealized Gains or Losses.
Payment on the Unfunded Actuarial Accrued Liability:	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 6.5% per annum.



TABLE 12  
(Continued)

TEACHERS RETIREMENT ASSOCIATION FUND  
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separations Expressed as the Number of Occurrences Per 10,000:

Age	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	Male	Female	Male	Female	Male	Female	Male	Female
20	4	4	600	600	4	4	0	0
21	4	4	600	600	4	4	0	0
22	4	4	600	600	4	4	0	0
23	4	4	600	600	5	5	0	0
24	4	4	600	600	5	5	0	0
25	5	5	600	600	5	5	0	0
26	5	5	600	600	5	5	0	0
27	5	5	600	600	5	5	0	0
28	5	5	600	600	5	5	0	0
29	5	5	580	580	5	5	0	0
30	5	5	565	565	6	6	0	0
31	6	6	540	540	6	6	0	0
32	6	6	520	520	6	6	0	0
33	6	6	500	500	6	6	0	0
34	7	7	480	480	6	6	0	0
35	7	7	440	440	6	6	0	0
36	7	7	370	370	7	7	0	0
37	8	8	330	330	7	7	0	0
38	8	8	280	280	8	8	0	0
39	9	9	240	240	8	8	0	0
40	9	9	210	210	8	8	0	0
41	10	10	195	195	9	9	0	0
42	10	10	185	185	9	9	0	0
43	11	11	175	175	10	10	0	0
44	12	12	160	160	10	10	0	0
45	13	13	145	145	11	11	0	0
46	14	14	130	130	12	12	0	0
47	15	15	115	115	13	13	0	0
48	16	16	100	100	14	14	0	0
49	18	18	85	85	16	16	0	0

TABLE 12  
(Continued)

TEACHERS RETIREMENT ASSOCIATION FUND  
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Separations Expressed as the Number of Occurrences Per 10,000:

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
50	20	20	70	70	17	17	0	0
51	23	23	55	55	19	19	0	0
52	26	26	40	40	22	22	0	0
53	29	29	25	25	26	26	0	0
54	33	33	10	10	30	30	0	0
55	38	38	0	0	36	36	0	0
56	42	42	0	0	41	41	0	0
57	47	47	0	0	47	47	0	0
58	53	53	0	0	52	52	0	0
59	59	59	0	0	58	58	0	0
60	65	65	0	0	63	63	0	0
61	71	71	0	0	69	69	0	0
62	78	78	0	0	0	0	10,000	10,000
63	85	85	0	0	0	0	0	0
64	93	93	0	0	0	0	0	0
65	100	100	0	0	0	0	0	0
66	109	109	0	0	0	0	0	0
67	119	119	0	0	0	0	0	0
68	131	131	0	0	0	0	0	0
69	144	144	0	0	0	0	0	0
70	159	159	0	0	0	0	0	0

## TEACHERS RETIREMENT ASSOCIATION FUND

ACTIVE MEMBERS AS OF JUNE 30, 1992

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									
25-29									
30-34									
35-39									
40-44									
45-49									
50-54						4	5	24	33
55-59						4	23	302	329
60-64						7	11	85	103
65+								15	15
ALL						15	39	426	480

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									
25-29									
30-34									
35-39									
40-44									
45-49									
50-54						49,127	43,918	39,805	41,558
55-59						30,937	38,936	45,109	44,505
60-64						38,374	44,458	41,984	42,003
65+								40,101	40,101
ALL						39,258	41,132	44,010	43,627

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE									
AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL						588	1,604	18,748	20,940

TABLE 4A  
BASIC

## TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1992

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54		1						1
55-59	126	162	4					292
60-64	66	333	488	2				889
65-69	25	145	659	169				998
70-74	2	34	416	421	95	2		970
75-79		1	55	440	320	70	1	887
80-84		1		46	450	98	53	648
85+				1	91	249	217	558
ALL	219	677	1,622	1,079	956	419	271	5,243

## AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54		1,487						1,487
55-59	28,555	23,007	16,761					25,316
60-64	24,550	23,232	22,803	5,686				23,056
65-69	22,195	20,553	23,567	13,469				21,385
70-74	6,416	18,675	20,766	16,404	9,602	12,127		17,659
75-79		1,857	19,827	16,860	12,800	5,330	10,772	14,646
80-84		3,723		10,142	13,362	6,138	5,575	11,390
85+				4,288	11,093	9,542	9,828	9,897
ALL	26,420	22,283	22,476	15,833	12,585	8,055	9,000	17,596

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	5,786	15,086	36,456	17,084	12,031	3,375	2,439	92,256

TABLE 5A  
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1992

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1				1	1	3
50-54	2	2	1	1		1		7
55-59	1	5	10	5	2	1		24
60-64		6	26	15	3	2	3	55
65-69	1	8	32	22	5	2	1	71
70-74		1	17	30	10	5	6	69
75-79			6	39	17	4	8	74
80-84			1	3	11	3	1	19
85+				1		5	7	13
ALL	4	23	93	116	48	24	27	335

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		11,816				4,335	1,958	6,037
50-54	14,923	16,147	15,810	15,064		2,967		13,712
55-59	1,220	15,383	18,197	10,688	6,689	7,529		13,936
60-64		14,890	16,238	12,204	7,678	3,692	2,427	13,315
65-69	8,400	18,762	18,173	13,266	9,856	7,093	2,378	15,461
70-74		33,527	16,744	14,857	18,482	5,352	3,614	14,452
75-79			10,911	19,586	14,901	4,261	2,973	15,182
80-84			11,626	8,558	12,160	4,347	7,146	10,066
85+				1,300		7,560	9,194	7,959
ALL	9,867	17,130	16,809	15,345	13,700	5,461	4,763	14,012

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	40	394	1,563	1,780	658	131	129	4,694

TABLE 6A  
BASIC

## TEACHERS RETIREMENT ASSOCIATION FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1992

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54								
55-59	3	5	2	2				12
60-64		5	5	7	1	1		19
65-69		1	1					2
70-74								
75-79								
80-84								
85+								
ALL	3	11	8	9	1	1		33

AVERAGE ANNUAL BENEFIT								
AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54								
55-59	29,341	27,433	23,912	17,226				25,623
60-64		28,846	22,992	23,279	15,062	8,455		23,456
65-69		20,576	19,066					19,821
70-74								
75-79								
80-84								
85+								
ALL	29,342	27,453	22,732	21,934	15,062	8,455		24,024

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	88	302	182	197	15	9		793

TEACHERS RETIREMENT ASSOCIATION FUND  
DETERMINATION OF CONTRIBUTION SUFFICIENCY  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	8.50%	\$1,896
2. Employer Contributions	12.14%	2,708
3. Total	----- 20.64% =====	----- \$4,604 =====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	12.73%	\$2,841
b. Disability benefits	0.72%	161
c. Survivors	0.64%	142
d. Deferred Retirement Benefits	1.42%	316
e. Refunds Due to Death or Withdrawal	1.04%	231
f. Total	----- 16.55% -----	----- \$3,691 -----

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1992  
is \$22,309.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

<b>Eligibility:</b>	<p>A public school or community college teacher who is not covered by the Social Security Act, except for teachers employed by Minneapolis, St. Paul or Duluth public schools or by the University of Minnesota.</p> <p>No community college teacher with more than three years of Allowable Service who was first employed before 7/1/89 is a Member if that person elects coverage under Sect. 354B.</p>
<b>Contributions</b>	
<b>Member:</b>	8.5% of salary.
<b>Employer:</b>	12.14% of salary.
<b>Allowable Service:</b>	A day of credit is earned if five hours are taught that day. A year is earned if 170 days of service are credited. Credit may also be provided for certain leaves if contributions are paid into the fund.
<b>Salary:</b>	Compensation used for contribution purposes excluding lump-sum annual or sick leave payments, severance payments, and any payments made in lieu of employer paid fringe benefits or expenses.
<b>Average Salary:</b>	Average of the five highest successive years of salary. Average Salary is based on all Allowable Service if less than five years.

**RETIREMENT**

**Normal Retirement  
Eligibility:**

First hired before July 1, 1989:  
Age 65 and three years of Allowable Service. Age 62 and 30 years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.



TEACHERS RETIREMENT ASSOCIATION FUND

SUMMARY OF PLAN PROVISIONS

Early Retirement  
Eligibility:

First hired after June 30, 1989:

The greater of age 65 or the age eligible for full Social Security retirement benefits and three years of Allowable Service. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.

First hired before July 1, 1989:

Age 55 and three years of Allowable Service.

Any age with 30 years of Allowable Service.

Rule of 90: Age plus Allowable Service totals 90.

First hired after June 30, 1989:

Age 55 with three years of Allowable Service.

Retirement Amount:

First hired before July 1, 1989:

The greater of

2% of Average Salary for each of the first 10 years of Allowable Service and 2.5% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement or age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90;

OR

2.5% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3% per year and actuarial reduction for each month the Member is under age 65.

First hired after June 30, 1989:

2.5% of Average Salary for each year of Allowable Service assuming augmentation to the age eligible for full Social Security retirement benefits at 3% per year and actuarial reduction for each month the Member is under the full Social Security benefit retirement age.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

**Form of Payment:**

Life annuity.  
Actuarially equivalent options are:  
50% or 100% joint and survivor with bounce back  
feature without additional reduction.  
15 year certain and life.  
Guaranteed refund.

**Benefit Increases:**

Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A Member who has been receiving a benefit for at least 12 full months as of June 30 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a partial pro rata increase.

Members retired under laws in effect before July 1, 1973 receive an additional lump-sum payment from TRA each year. In 1989, this lump-sum payment was the greater of \$25 times each full year of Allowable Service or the difference between \$400 times each full year of Allowable Service and the sum of the benefits paid from any Minnesota public pension plan plus cash payments from the Social Security Administration for the preceding fiscal year July 1, 1988 through June 30, 1989. In each following year, the lump-sum payment increases by the same percentage increase that is applied to regular annuities paid from MPRIF.

**DISABILITY**

**Disability Benefit**

**Eligibility:**

Total and permanent disability before normal retirement age with three years of Allowable Service.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

**Amount:** Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age unless an optional annuity plan is selected. Supplemental benefit of \$5 per month for each year under normal retirement age at commencement of disability (maximum of \$50 per month).

Payments stop at normal retirement age or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.

**Form of Payment:** Same as for retirement.

**Benefit Increases:** Adjusted by TRA to provide same increase as MPRIF.

**Retirement After Disability**

**Eligibility:** Normal retirement age.

**Amount:** Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

**Benefit Increases:** Same as for retirement.

**DEATH**

**Surviving Spouse Benefit**

**Eligibility:** Active Member with 18 months of Allowable Service or Member receiving a disability benefit.

TEACHERS RETIREMENT ASSOCIATION FUND

SUMMARY OF PLAN PROVISIONS

Amount:	50% of salary for the last full fiscal year preceding death. Maximum family benefit is \$1,000 per month. Benefits paid until spouse's death.
	Surviving spouse optional annuity or refund of contributions may be elected in lieu of this benefit.
Surviving Dependent Child Benefit	
Eligibility:	Active Member with 18 months of Allowable Service or Member receiving a disability benefit.
Amount:	10% of salary for the last full fiscal year preceding death. Family benefit minimum (including spouse's benefit) of 50% of salary and maximum \$1,000 per month. Benefits paid until child marries, dies, or attains age 18 (age 22 if full-time student.)
Surviving Spouse Optional Annuity	
Eligibility:	Member or former Member who dies before retirement or disability benefits commence, if age 50 with three years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55 with less than 30 years of Allowable Service, benefits commence when Member would have been age 55.
Amount:	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if retired.
Benefit Increases:	Adjusted by TRA to provide same increase as MPRIF except joint and survivor benefit increases which are paid by MPRIF.

TEACHERS RETIREMENT ASSOCIATION FUND

SUMMARY OF PLAN PROVISIONS

Refund of Contributions

**Eligibility:** Member dies before receiving any retirement benefits and survivor benefits are not elected.

**Amount:** The excess of the Member's contributions over any disability benefits paid plus 5% interest compounded annually if death occurred before May 16, 1989 and 6% interest compounded annually if death occurred on or after May 16, 1989.

TERMINATION

Refund of Contributions

**Eligibility:** Thirty days following termination of teaching service.

**Amount:** Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest compounded annually if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund.

Deferred Benefit

**Eligibility:** Three years of Allowable Service.

**Amount:** Benefit computed under law in effect at termination and increased by the following percentage compounded annually: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January 1 of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

## TEACHERS RETIREMENT ASSOCIATION FUND

ACTIVE MEMBERS AS OF JUNE 30, 1992

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,510	158							1,668
25-29	2,447	3,253	531						6,231
30-34	1,229	2,223	2,676	441	1				6,570
35-39	1,413	1,780	1,649	2,869	620				8,331
40-44	1,625	2,190	1,805	1,899	4,121	1,502			13,142
45-49	932	1,537	1,387	1,283	1,738	4,630	851		12,358
50-54	488	652	824	786	1,021	2,297	2,507	473	9,048
55-59	220	397	312	348	563	1,001	1,316	1,260	5,417
60-64	108	172	104	134	198	439	432	402	1,989
65+	51	70	23	17	24	58	48	32	323
ALL	10,023	12,432	9,311	7,777	8,286	9,927	5,154	2,167	65,077

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	16,639	21,880							17,135
25-29	12,324	22,185	26,442						18,675
30-34	10,976	21,699	27,748	30,358	22,787				22,738
35-39	10,577	21,224	28,496	32,468	37,040				25,907
40-44	10,158	21,445	29,660	34,467	38,279	40,173			30,479
45-49	9,530	18,409	29,651	35,086	39,631	42,226	43,634		34,377
50-54	7,972	17,655	27,415	33,419	39,458	44,180	43,914	45,304	37,306
55-59	8,279	13,104	22,859	31,891	38,868	43,386	44,644	46,351	38,346
60-64	6,652	8,694	21,140	29,282	37,234	43,404	44,152	46,531	36,472
65+	5,098	4,564	20,113	31,877	37,005	44,198	48,472	51,230	27,869
ALL	11,553	20,546	28,174	33,283	38,625	42,548	44,117	46,228	30,154

## PRIOR FISCAL YEAR EARNINGS (IN MILLIONS) BY YEARS OF SERVICE

AGE	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	ALL
ALL	115	255	262	258	320	422	227	100	1,962

TABLE 4B  
COORDINATED

## TEACHERS RETIREMENT ASSOCIATION FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1992

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1	4					5
50-54	7	7	2					16
55-59	387	471	3	2				863
60-64	597	1,373	705	2				2,677
65-69	174	1,076	1,454	213	1			2,918
70-74	17	208	1,244	663	81			2,213
75-79		13	175	1,014	360	24		1,586
80-84	1	1	6	85	1,064	116	4	1,277
85+				4	255	706	100	1,065
ALL	1,183	3,150	3,593	1,983	1,761	846	104	12,620

## AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1,442	783					915
50-54	14,859	12,081	956					11,906
55-59	16,791	12,484	9,213	1,112				14,378
60-64	15,511	14,767	14,709	14,711				14,918
65-69	12,790	12,015	12,762	5,499	12,058			11,959
70-74	9,028	10,734	10,890	9,194	3,232			10,073
75-79		8,458	10,585	9,901	8,697	2,798		9,584
80-84	626	2,796	2,320	10,323	8,204	3,772	1,536	7,885
85+				8,925	7,010	4,895	3,265	5,264
ALL	15,420	13,180	12,350	9,204	7,906	4,682	3,199	11,141

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	18,242	41,517	44,374	18,252	13,923	3,961	333	140,599

TABLE 5B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1992

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	2	5	3	1		1		12
50-54	9	11	4					24
55-59	11	34	10	1	1			57
60-64	6	43	48	8	2	2		109
65-69	2	35	76	36	3			152
70-74	1	13	63	61	14	2		154
75-79			14	90	37	4		145
80-84				8	30	2	2	42
85+				1	4	9	5	19
ALL	31	141	218	206	91	20	7	714

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,003	3,903	5,704	3,724		2,007		4,697
50-54	9,579	11,227	5,616					9,674
55-59	11,052	9,003	8,412	9,202	720			9,154
60-64	7,346	9,773	13,568	8,871	9,634	1,778		11,096
65-69	7,386	8,652	10,734	11,466	5,433			10,280
70-74	12,726	7,520	9,786	10,418	7,607	3,676		9,587
75-79			6,916	10,931	9,774	5,739		10,105
80-84				10,202	7,423	9,931	3,357	7,879
85+				3,034	8,436	6,341	2,714	5,654
ALL	9,464	9,007	10,570	10,683	8,361	5,641	2,898	9,751

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	293	1,270	2,304	2,201	761	113	20	6,962



TABLE 6B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1992

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	5	28	9	3				45
50-54	5	27	14	8	1			55
55-59	11	49	21	3	3	1		88
60-64	7	33	24	7				71
65-69		2		2	1			5
70-74								
75-79								
80-84								
85+								
ALL	28	139	68	23	5	1		264

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	3,949	5,958	5,853	16,260				6,401
50-54	10,000	9,950	9,006	6,229	2,210			9,033
55-59	13,388	11,509	8,383	4,229	4,781	5,680		10,455
60-64	12,826	13,044	9,830	6,896				11,330
65-69		15,368		11,591	3,385			11,461
70-74								
75-79								
80-84								
85+								
ALL	10,958	10,509	8,687	7,946	3,988	5,680		9,722

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	307	1,461	591	183	20	6		2,567

TEACHERS RETIREMENT ASSOCIATION FUND  
DETERMINATION OF CONTRIBUTION SUFFICIENCY  
(DOLLARS IN THOUSANDS)

JULY 1, 1992

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 353		
1. Employee Contributions	4.50%	\$94,054
2. Employer Contributions	8.14%	170,133
3. Total	12.64%	\$264,187
	=====	=====
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	7.98%	\$166,847
b. Disability benefits	0.49%	10,165
c. Survivors	0.17%	3,495
d. Deferred Retirement Benefits	0.52%	10,882
e. Refunds Due to Death or Withdrawal	0.50%	10,536
f. Total	9.66%	\$201,925
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Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1992  
is \$2,090,091.

TEACHERS RETIREMENT ASSOCIATION FUND COORDINATED

SUMMARY OF PLAN PROVISIONS

**Eligibility:** A public school, community college or state university teacher who is not covered by the Social Security Act, except for teachers employed by Minneapolis, St. Paul or Duluth public schools or by the University of Minnesota.

No community college teacher or state university teacher first employed after June 30, 1989 is a Member except for purposes of Social Security coverage. No community college or state university teacher first employed before July 1, 1989 is a Member except for purposes of Social Security coverage if that person elects coverage under Sec. 354B.

**Contributions**

**Member:** 4.5% of salary.

**Employer:** 8.14% of salary.

**Allowable Service:** A day of credit is earned if five hours are taught that day. A year is earned if 170 days of service are credited. Credit may also be provided for certain leaves if contributions are paid into the fund.

**Salary:** Compensation used for contribution purposes excluding lump-sum annual or sick leave payments, severance payments, and any payments made in lieu of employer paid fringe benefits or expenses.

**Average Salary:** Average of the five highest successive years of salary. Average salary is based on all Allowable Service if less than five years.

**RETIREMENT**

**Normal Retirement  
Eligibility:**

First hired before July 1, 1989:  
Age 65 and three years of Allowable Service. Age 62 and 30 years of Allowable Service. Proportionate Retirement Annuity is available at age 65 and one year of Allowable Service.

TEACHERS RETIREMENT ASSOCIATION FUND

SUMMARY OF PLAN PROVISIONS

First hired after June 30, 1989:

The greater of age 65 or the age eligible for full Social Security retirement benefits and three years of Allowable Service. Proportionate Retirement Annuity is available at normal retirement age and one year of Allowable Service.

Early Retirement  
Eligibility:

First hired before July 1, 1989:

Age 55 and three years of Allowable Service.

Any age with 30 years of Allowable Service.

Rule of 90: Age plus Allowable Service totals 90.

First hired after June 30, 1989:

Age 55 with three years of Allowable Service.

Retirement Amount:

First hired before July 1, 1989:

The greater of

1% of Average Salary for each of the first 10 years of Allowable Service and 1.5% of Average Salary for each subsequent year with reduction of 0.25% for each month the Member is under age 65 at time of retirement (age 62 if 30 years of Allowable Service). No reduction if age plus years of Allowable Service totals 90;

OR

1.5% of Average Salary for each year of Allowable Service assuming augmentation to age 65 at 3% per year and actuarial reduction for each month the Member is under age 65.

First hired after June 30, 1989:

1.5% of Average Salary for each year of Allowable Service assuming augmentation to age eligible for full Social Security retirement benefits at 3% per year and actuarial reduction for each month the Member is under the full Social Security benefit retirement age.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

**Form of Payment:**

Life annuity.  
Actuarially equivalent options are:  
50% or 100% joint and survivor with bounce back  
feature without additional reduction.  
15 year certain and life.  
Guaranteed refund.

**Benefit Increases:**

Benefits may be increased each January 1 depending on the investment performance of the Minnesota Post Retirement Investment Fund (MPRIF). A Member who has been receiving a benefit for at least 12 full months as of the previous June 30 will receive a full increase. Members receiving benefits for at least one full month but less than 12 full months will receive a partial pro rata increase.

Members retired under laws in effect before July 1, 1973 receive an additional lump-sum payment from TRA each year. In 1989, this lump-sum payment was the greater of \$25 times each full year of Allowable Service. In each following year, the lump-sum payment increases by the same percentage increase that is applied to regular annuities paid from MPRIF.

**DISABILITY**

**Disability Benefit**

**Eligibility:**

Total and permanent disability before normal retirement age with three years of Allowable Service.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

**Amount:** Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before normal retirement age unless an optional annuity plan is selected.

Payments stop at normal retirement age or earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.

**Form of Payment:** Same as for retirement.

**Benefit Increases:** Adjusted by TRA to provide same increase as MPRIF.

**Retirement After Disability**

**Eligibility:** Normal retirement age.

**Amount:** Any optional annuity continues. Otherwise, the larger of the disability benefit paid before normal retirement age or the normal retirement benefit available at normal retirement age, or an actuarially equivalent optional annuity.

**Benefit Increases:** Same as for retirement.

**DEATH**

**Surviving Spouse  
Optional Annuity**

**Eligibility:** Member or former Member who dies before retirement benefits commence, if age 50 with three years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55 with less than 30 years of Allowable Service, benefits commence when Member would have been age 55.

**TEACHERS RETIREMENT ASSOCIATION FUND**

**SUMMARY OF PLAN PROVISIONS**

<b>Amount:</b>	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if retired.
<b>Benefit Increases:</b>	From MPRIF.
<b>Refund of Contributions</b>	
<b>Eligibility:</b>	Member dies before receiving any retirement benefits and the surviving spouse optional annuity is not elected.
<b>Amount:</b>	The excess of the Member's contributions over any disability benefits paid plus 5% interest compounded annually if death occurred before May 16, 1989 and 6% interest compounded annually if death occurred on or after May 16, 1989.

**TERMINATION**

**Refund of Contributions**

<b>Eligibility:</b>	Thirty days following termination of teaching service.
<b>Amount:</b>	Member's contributions with 5% interest compounded annually if termination occurred before May 16, 1989 and 6% interest compounded annually if termination occurred on or after May 16, 1989. A deferred annuity may be elected in lieu of a refund.

**Deferred Benefit**

<b>Eligibility:</b>	Three years of Allowable Service.
<b>Amount:</b>	Benefit computed under law in effect at termination and increased by the following percentage compounded annually: 0% before 7/1/71; 5% from 7/1/71 to 1/1/81; and 3% thereafter until January 1 of the year following attainment of age 55 and 5% thereafter until the annuity begins. Amount is payable as a normal or early retirement.