



DEC 1991

Received  
MN State  
Teachers  
Retirement

**TEACHERS RETIREMENT ASSOCIATION FUND**  
**ACTUARIAL VALUATION REPORT**  
**JULY 1, 1991**

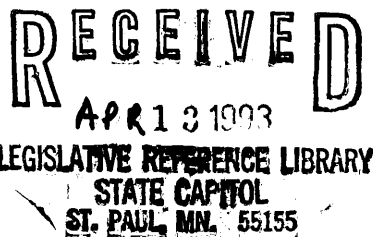
*Pursuant to MS 356.215*

**MILLIMAN & ROBERTSON, INC.**

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
Basic and Coordinated	
<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, 1991	22
Table 4A - Service Retirements as of June 30, 1991	23
Table 5A - Survivors as of June 30, 1991	24
Table 6A - Disability Retirements as of June 30, 1991	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, 1991	33
Table 4B - Service Retirements as of June 30, 1991	34
Table 5B - Survivors as of June 30, 1991	35
Table 6B - Disability Retirements as of June 30, 1991	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	<b>37</b>
<b><u>Plan Provisions</u></b>	
Table 13B- Summary of Plan Provisions	<b>38</b>

# TEACHERS RETIREMENT ASSOCIATION FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/90 Valuation</u>	<u>07/01/91 Valuation</u>
<b>A. CONTRIBUTIONS (Table 11)</b>		
1. Statutory Contributions - Chapter 354 % of Payroll	12.80%	12.76%
2. Required Contributions - Chapter 356 % of Payroll	13.11%	13.04%
3. Sufficiency (Deficiency): (A.1. - A.2.)	-0.31%	-0.28%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$5,131,999	\$5,614,924
b. Current Benefit Obligations (Table 8)	\$6,029,037	\$6,536,973
c. Funding Ratio: (a/b)	85.12%	85.89%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$5,131,999	\$5,614,924
b. Actuarial Accrued Liability (Table 9)	\$6,611,074	\$7,213,720
c. Funding Ratio: (a/b)	77.63%	77.84%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$8,416,752	\$9,070,387
b. Current and Expected Future Benefit Obligations	\$8,549,154	\$9,195,099
c. Funding Ratio: (a/b)	98.45%	98.64%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	64,324	65,093
b. Projected Annual Earnings	\$1,931,669	\$2,044,754
c. Average Annual Earnings (Actual \$)	\$30,030	\$31,413
d. Average Age	42.8	42.7
e. Average Service	12.3	12.1
2. Others		
a. Service Retirements (Table 4)	16,133	16,851
b. Disability Retirements (Table 5)	257	280
c. Survivors (Table 6)	929	955
d. Deferred Retirements (Table 7)	1,955	3,134
e. Terminated Other Non-vested (Table 7)	15,356	15,151
f. Total	34,630	36,371

## **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 85.89%. The corresponding ratio for the prior year was 85.12%.

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 1991 the ratio is 77.84%, which is an increase from the 1990 value of 77.63%.

The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 98.64% 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, 1991 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	\$2,516,106,260
Current Employees	
Accumulated employee contributions including allocated investment income	\$1,664,304,194
Employer-financed vested	2,344,186,008
Employer-financed nonvested	12,376,732
	-----
Total Pension Benefit Obligation	\$6,536,973,194
Net Assets Available for Benefits at Cost	\$5,513,281,374
Total Benefit Obligation less Assets	\$1,023,691,820
Funded Ratio	84.34%



### 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 12.76% compared to the Required Contribution Rate of 13.04%.

### Changes in Actuarial Assumptions

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

### 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, 1991

	<u>Market Value</u>	<u>Cost Value</u>
<b>A. ASSETS</b>		
1. Cash, Equivalents, Short-term Securities	\$32,862	\$32,862
2. Investments		
a. Fixed Income	871,903	872,827
b. Equity	2,611,864	2,306,011
c. Real Estate	0	0
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	2,301,369	2,301,369
4. Other	30,140	30,140
	-----	-----
<b>B. TOTAL ASSETS</b>	<b>\$5,848,138</b>	<b>\$5,543,209</b>
	=====	=====
<b>C. AMOUNTS CURRENTLY PAYABLE</b>	<b>\$29,928</b>	<b>\$29,928</b>
<b>D. ASSETS AVAILABLE FOR BENEFITS</b>		
1. Member Reserves	\$838,160	\$838,160
2. Employer Reserves	2,678,681	2,373,752
3. MPRIF Reserves	2,301,369	2,301,369
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	<b>\$5,818,210</b>	<b>\$5,513,281</b>
	-----	-----
<b>E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS</b>	<b>\$5,848,138</b>	<b>\$5,543,209</b>
	=====	=====
<b>F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS</b>		
1. Cost Value of Assets Available for Benefits (D5)		\$5,513,281
2. Market Value (D5)	\$5,818,210	
3. Cost Value (D5)	5,513,281	
	-----	
4. Market Over Cost: (F2-F3)	\$304,929	
5. 1/3 of Market Over Cost: (F4)/3		101,643
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<b>\$5,614,924</b>
		=====

TABLE 2

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

**YEAR ENDING JUNE 30, 1991**

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$5,304,981	\$5,045,508
B. OPERATING REVENUES		
1. Member Contributions	\$89,313	\$89,313
2. Employer Contributions	159,439	159,439
3. Investment Income	235,771	235,771
4. MPRIF Income	195,106	195,106
5. Net Realized Gain (Loss)	0	0
6. Other	1,965	1,965
7. Net Change in Unrealized Gain (Loss)	45,456	0
	-----	-----
8. Total Revenue	\$727,050	\$681,594
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$194,589	\$194,589
2. Disability Benefits	2,921	2,921
3. Survivor Benefits	2,905	2,905
4. Refunds	5,554	5,554
5. Expenses	7,138	7,138
6. Other	714	714
	-----	-----
7. Total Disbursements	213,821	213,821
	-----	-----
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	\$5,818,210	\$5,513,281
	=====	=====

TABLE 3

## TEACHERS RETIREMENT ASSOCIATION FUND

## ACTIVE MEMBERS AS OF JUNE 30, 1991

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,410	146	1						1,557
25-29	2,419	2,618	1,056	1					6,094
30-34	1,178	1,837	2,726	820	1				6,562
35-39	1,484	1,625	1,708	2,738	1,494				9,049
40-44	1,623	1,856	1,886	1,861	3,839	2,750			13,815
45-49	925	1,064	1,366	1,169	1,487	4,006	1,403		11,420
50-54	476	575	725	676	926	1,895	2,514	755	8,542
55-59	232	264	307	341	519	924	1,283	1,773	5,643
60-64	128	128	110	114	214	436	425	526	2,081
65+	39	67	23	19	24	59	44	55	330
ALL	9,914	10,180	9,908	7,739	8,504	10,070	5,669	3,109	65,093

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	8,305	22,087	30,510						9,612
25-29	8,151	21,462	25,160	19,480					16,819
30-34	6,582	19,405	25,845	29,456	39,309				21,037
35-39	6,490	19,456	27,252	30,837	35,328				24,865
40-44	6,501	18,644	28,177	32,582	36,774	39,241			29,535
45-49	5,623	17,380	27,063	33,444	38,422	41,325	42,096		33,406
50-54	4,356	17,020	25,451	31,482	37,759	42,564	42,940	43,647	36,071
55-59	4,006	13,116	19,846	29,344	37,019	41,467	43,097	44,664	37,658
60-64	2,311	9,633	17,310	27,605	36,496	40,634	42,381	44,975	35,452
65+	1,644	5,342	15,220	27,712	33,519	44,446	47,604	45,018	28,170
ALL	6,852	19,117	26,293	31,438	36,915	40,990	42,761	44,476	28,785

## 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	67	194	260	243	313	412	242	138	1,873

TABLE 4

## TEACHERS RETIREMENT ASSOCIATION FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		3	2					5
50-54	10	10	3	1				24
55-59	467	566	6	1				1,040
60-64	610	1,631	1,040	4				3,285
65-69	166	1,304	1,863	310	3			3,646
70-74	25	216	1,652	997	147	1		3,038
75-79		12	239	1,530	619	87	2	2,489
80-84		1	6	167	1,442	167	60	1,843
85+				2	417	767	295	1,481
ALL	1,278	3,743	4,811	3,012	2,628	1,022	357	16,851

## AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1,043	629					877
50-54	11,562	12,655	911	854				10,240
55-59	18,129	12,983	12,537	1,279				15,280
60-64	16,257	15,464	16,714	7,569				15,997
65-69	12,978	12,455	14,470	7,642	13,220			13,100
70-74	16,724	11,225	12,180	11,414	6,080	11,597		11,603
75-79		6,929	11,400	10,731	9,096	4,526	9,096	10,152
80-84		3,568	2,384	9,158	8,334	4,245	5,026	7,909
85+				2,661	6,063	6,068	7,326	6,313
ALL	16,488	13,746	13,985	10,536	8,033	5,644	6,949	11,922

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	21,071	51,451	67,281	31,734	21,110	5,768	2,480	200,897

TABLE 5

## TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1991

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	1	5	1		1	2		10
50-54	2	12	5	1		1		21
55-59	9	35	22	6	5			77
60-64	8	44	70	19	8	2	3	154
65-69	1	42	103	47	7	1	3	204
70-74	1	10	78	82	14	7	3	195
75-79			15	139	40	7	8	209
80-84			1	22	31	4	1	59
85+				1	4	11	10	26
ALL	22	148	295	317	110	35	28	955

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	13,757	8,566	2,827		4,157	1,901		6,737
50-54	6,871	6,614	10,424	11,002		2,840		7,575
55-59	8,881	9,278	13,330	10,584	4,664			10,192
60-64	14,154	11,505	12,947	11,892	8,143	3,258	2,327	11,885
65-69	11,895	8,209	12,193	11,320	5,957	10,630	2,612	10,808
70-74	6,338	5,943	11,233	10,600	13,274	4,662	4,146	10,472
75-79			7,866	12,834	11,048	3,853	2,985	11,458
80-84			11,148	10,360	6,923	7,818	2,459	8,261
85+				7,293	5,699	5,786	5,884	5,868
ALL	10,859	9,171	11,918	11,738	9,086	5,095	4,016	10,600

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	238	1,357	3,515	3,720	999	178	112	10,123

TABLE 6

## TEACHERS RETIREMENT ASSOCIATION FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7	28	9	3				47
50-54	10	24	13	6	1			54
55-59	9	48	17	5	4			83
60-64	6	35	26	12	3	1		83
65-69	1	4	6	2				13
70-74								
75-79								
80-84								
85+								
ALL	33	139	71	28	8	1		280

## AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,125	5,569	12,020	3,327				6,893
50-54	12,310	9,095	6,859	6,074	2,119			8,687
55-59	14,991	11,093	10,975	9,082	8,765			11,258
60-64	12,605	12,601	14,539	10,461	11,476	8,104		12,804
65-69	15,750	9,664	12,361	7,033				10,972
70-74								
75-79								
80-84								
85+								
ALL	12,099	9,974	11,776	8,266	8,951	8,104		10,475

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	399	1,386	836	231	71	8		2,933



TABLE 7

**TEACHERS RETIREMENT ASSOCIATION FUND**  
**RECONCILIATION OF MEMBERS**

	<u>Actives</u>	<u>Terminated</u>	
		<u>Deferred Retirement *</u>	<u>Other Non-Vested *</u>
A. ON JUNE 30, 1990	64,324	1,955	15,356
B. ADDITIONS	4,238	1,315	343
C. DELETIONS			
1. Service Retirement	(1,158)	(136)	0
2. Disability	(68)	0	0
3. Death	(62)	0	(22)
4. Terminated - Deferred	(1,315)	0	0
5. Terminated - Refund	(1,978)	0	(95)
6. Terminated - Other Non-Vested	(343)	0	0
7. Returned as Active	1,455	0	(1,455)
D. DATA ADJUSTMENTS	0	0	1,046
Vested	48,050		
Non-Vested	17,043		
E. TOTAL ON JUNE 30, 1991	65,093	3,134	15,173

	<u>Retirement Annuitants</u>	<u>Recipients</u>	
		<u>Disabled</u>	<u>Survivors</u>
A. ON JUNE 30, 1990	16,133	257	929
B. ADDITIONS	1,299	68	132
C. DELETIONS			
1. Service Retirement	0	(14)	0
2. Death	(413)	(18)	(12)
3. Annuity Expired	(2)	0	(68)
4. Returned as Active	0	(11)	0
D. DATA ADJUSTMENTS	(166)	(2)	(26)
E. TOTAL ON JUNE 30, 1991	16,851	280	955

\* Insufficient detail in data reconciliation provided by the plan administrator.

TABLE 8

## TEACHERS RETIREMENT ASSOCIATION FUND

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1991

A.	CURRENT ASSETS (TABLE 1, F6)			\$5,614,924
B.	EXPECTED FUTURE ASSETS			
1.	Present Value of Expected Future Statutory Supplemental Contributions			\$1,474,084
2.	Present Value of Future Normal Costs			1,981,379
3.	Total Expected Future Assets			<u>\$3,455,463</u>
C.	TOTAL CURRENT AND EXPECTED FUTURE ASSETS			<u>\$9,070,387</u>
D.	CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>
1.	Benefit Recipients			
a.	Retirement Annuities		\$2,244,814	\$2,244,814
b.	Disability Benefits		41,370	41,370
c.	Surviving Spouse and Child Benefits		84,667	84,667
2.	Deferred Retirements With Future Augmentation		113,093	113,093
3.	Former Members Without Vested Rights		32,162	32,162
4.	Active Members			
a.	Retirement Annuities	10,194	3,656,380	3,666,574
b.	Disability Benefits	153,366	0	153,366
c.	Survivor's Benefits	65,630	0	65,630
d.	Deferred Retirements	955	111,609	112,564
e.	Refund Liability Due to Death or Withdrawal	0	22,733	22,733
5.	Total Current Benefit Obligations	<u>\$230,145</u>	<u>6,306,828</u>	<u>\$6,536,973</u>
E.	EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$2,658,126</u>
F.	TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS			<u>\$9,195,099</u>
G.	CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)			<u>\$922,049</u>
H.	CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)			\$124,712

TABLE 9

## TEACHERS RETIREMENT ASSOCIATION FUND

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

JULY 1, 1991

	Actuarial Present Value of Projected Benefits (1)	Actuarial Present Value of Future Normal Costs (2)	Actuarial Accrued Liability (3)=(1)-(2)
<b>A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)</b>			
1. Active Members			
a. Retirement Annuities	\$6,104,494	\$1,629,738	\$4,474,756
b. Disability Benefits	253,464	100,303	153,161
c. Survivor's Benefit	107,154	33,803	73,351
d. Deferred Retirements	171,669	110,711	60,958
e. Refunds Due to Death or Withdrawal	42,212	106,824	(64,612)
f. Total	<u>\$6,678,993</u>	<u>\$1,981,379</u>	<u>\$4,697,614</u>
2. Deferred Retirements With Future Augmentation	113,093		113,093
3. Former Members Without Vested Rights	32,162		32,162
4. Annuitants in MPRIF	2,301,369		2,301,369
5. Recipients Not in MPRIF	69,482		69,482
6. Total	<u>\$9,195,099</u>	<u>\$1,981,379</u>	<u>\$7,213,720</u>
<b>B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)</b>			
1. AAL (A6)			\$7,213,720
2. Current Assets (Table 1, F6)			5,614,924
3. UAAL (B1-B2)			<u>\$1,598,796</u>
<b>C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE</b>			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			\$44,266,801
2. Supplemental Contribution Rate (B3/C1)			3.61%

TABLE 10

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

**YEAR ENDING JUNE 30, 1991**

A.	UAAL AT BEGINNING OF YEAR	\$1,479,075
B.	CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1.	Normal Cost and Expenses	\$186,513
2.	Contribution	(248,752)
3.	Interest on A, B1 and B2	123,076
		-----
4.	Total (B1+B2+B3)	\$60,837
		-----
C.	EXPECTED UAAL AT END OF YEAR (A+B4)	\$1,539,912
D.	INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1.	Salary Increases	(\$30,399)
2.	Investment Return	11,305
3.	MPRIF Mortality	1,048
4.	Mortality of Other Benefit Recipients	(4,979)
5.	Other Items	81,909
		-----
6.	Total	\$58,884
		-----
E.	UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D5)	\$1,598,796
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)	\$1,598,796
		=====

TABLE 11

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

**JULY 1, 1991**

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354</b>		
1. Employee Contributions	4.56%	\$93,231
2. Employer Contributions	8.20%	167,660
3. Total	----- 12.76% -----	----- \$260,891 -----
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	7.48%	\$152,882
b. Disability benefits	0.45%	9,290
c. Survivors	0.16%	3,333
d. Deferred Retirement Benefits	0.49%	10,112
e. Refunds Due to Death or Withdrawal	0.47%	9,539
f. Total	----- 9.06% -----	----- \$185,156 -----
2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	3.61%	73,816
3. Allowance for Expenses	0.37%	7,566
4. Total	----- 13.04% -----	----- \$266,538 -----
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)     (A3-B4)</b>	-0.28%	(\$5,647)

**Note:** Projected Annual Payroll for Fiscal Year Beginning on July 1, 1991  
is \$2,044,754.

TABLE 12

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

<b>Interest:</b>	<p>Pre-Retirement: 8.5% per annum</p> <p>Post-Retirement: 5.0% per annum</p>
<b>Salary Increases:</b>	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.
<b>Mortality:</b>	<p><b>Pre-Retirement:</b></p> <p>Male - 1971 Group Annuity Mortality Table set back eight years</p> <p>Female - 1971 Group Annuity Mortality Table set back eight years</p> <p><b>Post-Retirement:</b></p> <p>Male - Same as above</p> <p>Female - Same as above</p> <p><b>Post-Disability:</b></p> <p>Male - Same as above</p> <p>Female - Same as above</p>
<b>Retirement Age:</b>	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.
<b>Separation:</b>	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>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
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	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>	
	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

TABLE 3A  
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

ACTIVE MEMBERS AS OF JUNE 30, 1991

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						1			1
50-54					1	6	13	88	108
55-59				1	1	6	24	408	440
60-64	2				1	6	11	95	115
65+	1							16	17
ALL	3			1	3	19	48	607	681

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						44,871			44,871
50-54					65	31,274	39,707	41,636	40,443
55-59				184	1,388	34,575	39,478	43,582	43,041
60-64	1,064				4,263	40,759	40,782	40,492	39,533
65+	51							39,391	37,077
ALL	726			184	1,905	36,027	39,839	42,706	41,890

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	2				5	684	1,912	25,922	28,527

TABLE 4A  
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54	1	3						4
55-59	122	165	5					292
60-64	81	393	431	3				908
65-69	21	191	607	142	3			964
70-74	3	37	434	396	88	1		959
75-79		1	55	505	283	69	2	915
80-84		1	2	52	420	83	57	615
85+					81	225	202	508
ALL	228	791	1,534	1,098	875	378	261	5,165

AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								
50-54	16,207	10,255						11,743
55-59	26,783	19,107	13,555					22,219
60-64	23,952	22,050	21,563	7,024				21,939
65-69	20,091	20,115	21,171	11,246	13,220			19,452
70-74	39,692	15,705	19,354	15,494	8,417	11,597		16,671
75-79		1,781	17,906	15,057	11,177	4,880	9,096	13,233
80-84		3,568	1,984	9,076	11,976	5,409	5,211	10,171
85+					9,258	10,103	9,268	9,636
ALL	25,284	20,578	20,600	14,417	11,112	8,123	8,381	16,351

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	5,764	16,277	31,600	15,829	9,723	3,070	2,187	84,452

TABLE 5A  
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1991

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	1	1			1	1		4
50-54		1	2	1		1		5
55-59	1	5	13	6	4			29
60-64		8	26	13	6	1	3	57
65-69		7	27	19	4	1	3	61
70-74			21	28	8	5	3	65
75-79			4	41	12	5	8	70
80-84			1	8	7	2		18
85+						5	6	11
ALL	2	22	94	116	42	21	23	320

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	13,757	11,054			4,157	1,877		7,711
50-54		17,729	14,703	11,002		2,840		12,195
55-59	25,174	15,979	14,257	10,584	5,658			12,984
60-64		14,333	15,942	12,328	8,490	4,647	2,327	13,193
65-69		15,268	15,931	13,095	7,737	10,630	2,612	13,692
70-74			17,803	15,236	17,015	5,120	4,146	14,994
75-79			8,337	17,951	15,116	3,736	2,985	14,190
80-84			11,148	11,554	7,610	9,115		9,727
85+						6,914	8,073	7,546
ALL	19,466	15,010	15,721	14,988	11,416	5,575	4,329	13,380

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	38	330	1,477	1,738	479	117	99	4,281

TABLE 6A  
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS DISABLED							ALL
	<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								
50-54								
55-59	2	5	2	2	1			12
60-64		4	8	4	2	1		19
65-69			1					1
70-74								
75-79								
80-84								
85+								
ALL	2	9	11	6	3	1		32

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<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								
50-54								
55-59	31,259	26,416	22,927	16,516	18,994			24,373
60-64		22,459	25,864	14,357	15,591	8,104		20,709
65-69			15,687					15,687
70-74								
75-79								
80-84								
85+								
ALL	31,259	24,657	24,405	15,077	16,725	8,104		21,926

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED								
AGE	<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>	ALL
ALL	62	221	268	90	50	8		701

TABLE 11A  
BASIC

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

JULY 1, 1991

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 354		
1. Employee Contributions	8.50%	\$2,586
2. Employer Contributions	12.14%	3,694
3. Total	20.64%	\$6,280
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	11.71%	\$3,562
b. Disability benefits	0.67%	204
c. Survivors	0.59%	179
d. Deferred Retirement Benefits	1.33%	405
e. Refunds Due to Death or Withdrawal	0.91%	278
f. Total	15.21%	\$4,628

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1991 is \$30,425.

**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**

<b>Normal Retirement Eligibility:</b>	<p>First hired before July 1, 1989:</p> <p>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.</p>
---------------------------------------	--

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

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

<b>Amount:</b>	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.
<b>Surviving Dependent Child Benefit</b>	
<b>Eligibility:</b>	Active Member with 18 months of Allowable Service or Member receiving a disability benefit.
<b>Amount:</b>	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.)
<b>Surviving Spouse Optional Annuity</b>	
<b>Eligibility:</b>	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.
<b>Amount:</b>	Survivor's payment of the 100% joint and survivor benefit the Member could have elected if retired.
<b>Benefit Increases:</b>	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 if death occurred before May 16, 1989 and 6% interest 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 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.

TABLE 3B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

ACTIVE MEMBERS AS OF JUNE 30, 1991

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,410	146	1						1,557
25-29	2,419	2,618	1,056	1					6,094
30-34	1,178	1,837	2,726	820	1				6,562
35-39	1,484	1,625	1,708	2,738	1,494				9,049
40-44	1,623	1,856	1,886	1,861	3,839	2,750			13,815
45-49	925	1,064	1,366	1,169	1,487	4,005	1,403		11,419
50-54	476	575	725	676	925	1,889	2,501	667	8,434
55-59	232	264	307	340	518	918	1,259	1,365	5,203
60-64	126	128	110	114	213	430	414	431	1,966
65+	38	67	23	19	24	59	44	39	313
ALL	9,911	10,180	9,908	7,738	8,501	10,051	5,621	2,502	64,412

AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	8,305	22,087	30,510						9,612
25-29	8,151	21,462	25,160	19,480					16,819
30-34	6,582	19,405	25,845	29,456	39,309				21,037
35-39	6,490	19,456	27,252	30,837	35,328				24,865
40-44	6,501	18,644	28,177	32,582	36,774	39,241			29,535
45-49	5,623	17,380	27,063	33,444	38,422	41,325	42,096		33,406
50-54	4,356	17,020	25,451	31,482	37,802	42,598	42,958	43,918	36,016
55-59	4,006	13,116	19,846	29,429	37,087	41,512	43,170	45,014	37,210
60-64	2,332	9,633	17,310	27,605	36,649	40,632	42,426	45,982	35,218
65+	1,688	5,342	15,220	27,712	33,519	44,446	47,604	47,335	27,687
ALL	6,854	19,117	26,293	31,442	36,927	41,000	42,788	44,925	28,647

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	67	194	260	243	313	412	240	112	1,845

TABLE 4B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		3	2					5
50-54	9	7	3	1				20
55-59	345	401	1	1				748
60-64	529	1,238	609	1				2,377
65-69	145	1,113	1,256	168				2,682
70-74	22	179	1,218	601	59			2,079
75-79		11	184	1,025	336	18		1,574
80-84			4	115	1,022	84	3	1,228
85+				2	336	542	93	973
ALL	1,050	2,952	3,277	1,914	1,753	644	96	11,686

AVERAGE ANNUAL BENEFIT

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1,043	629					877
50-54	11,048	13,686	911	854				9,941
55-59	15,163	10,596	7,447	1,279				12,686
60-64	15,130	13,691	13,615	9,208				13,990
65-69	11,959	11,261	11,626	4,672				11,057
70-74	13,594	10,321	9,867	8,938	2,646			9,472
75-79		7,398	9,490	8,856	7,489	3,211		8,564
80-84			2,586	9,220	7,062	3,133	1,503	6,967
85+				2,661	5,325	4,499	3,229	4,659
ALL	14,636	12,114	11,193	8,522	6,662	4,285	3,175	10,171

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	15,367	35,760	36,679	16,311	11,678	2,759	304	118,858

TABLE 5B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1991

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		4	1			1		6
50-54	2	11	3					16
55-59	8	30	9		1			48
60-64	8	36	44	6	2	1		97
65-69	1	35	76	28	3			143
70-74	1	10	57	54	6	2		130
75-79			11	98	28	2		139
80-84				14	24	2	1	41
85+				1	4	6	4	15
ALL	20	126	201	201	68	14	5	635

AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		7,945	2,827			1,925		6,089
50-54	6,871	5,605	7,573					6,132
55-59	6,843	8,166	11,998		691			8,508
60-64	14,154	10,881	11,189	10,956	7,105	1,870		11,125
65-69	11,895	6,798	10,875	10,126	3,585			9,585
70-74	6,338	5,943	8,822	8,214	8,292	3,520		8,223
75-79			7,697	10,708	9,308	4,149		10,093
80-84				9,681	6,725	6,524	2,459	7,621
85+				7,293	5,699	4,848	2,601	4,639
ALL	9,998	8,155	10,149	9,876	7,650	4,376	2,573	9,208

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	199	1,027	2,039	1,985	520	61	12	5,847

TABLE 6B  
COORDINATED

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1991

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7	28	9	3				47
50-54	10	24	13	6	1			54
55-59	7	43	15	3	3			71
60-64	6	31	18	8	1			64
65-69	1	4	5	2				12
70-74								
75-79								
80-84								
85+								
ALL	31	130	60	22	5			248

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	7,125	5,569	12,020	3,327				6,893
50-54	12,310	9,095	6,859	6,074	2,119			8,687
55-59	10,344	9,311	9,384	4,126	5,356			9,042
60-64	12,605	11,329	9,510	8,516	3,246			10,459
65-69	15,750	9,664	11,697	7,033				10,580
70-74								
75-79								
80-84								
85+								
ALL	10,863	8,957	9,463	6,409	4,287			8,998

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED								
AGE	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
ALL	336	1,164	567	140	21			2,231



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

JULY 1, 1991

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 354		
1. Employee Contributions	4.50%	\$90,645
2. Employer Contributions	8.14%	163,966
3. Total	----- 12.64% -----	----- \$254,611 -----
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	7.41%	\$149,320
b. Disability benefits	0.45%	9,086
c. Survivors	0.16%	3,153
d. Deferred Retirement Benefits	0.48%	9,707
e. Refunds Due to Death or Withdrawal	0.46%	9,261
f. Total	----- 8.96% -----	----- \$180,528 -----

Note: Projected Annual Payroll for Fiscal Year Beginning on July 1, 1991  
is \$2,014,329.

**TEACHERS RETIREMENT ASSOCIATION FUND COORDINATED**

**SUMMARY OF PLAN PROVISIONS**

<b>Eligibility:</b>	<p>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.</p> <p>No community college teacher or state university teacher first employed <u>after June 30, 1989</u> is a Member except for purposes of Social Security coverage. No community college or state university teacher first employed <u>before July 1, 1989</u> is a Member except for purposes of Social Security coverage if that person elects coverage under Sec. 354B.</p>
<b>Contributions</b>	
<b>Member:</b>	4.5% of salary.
<b>Employer:</b>	8.14% 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 re 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**

<b>Normal Retirement Eligibility:</b>	<p>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.</p>
---------------------------------------	---

**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 if death occurred before May 16, 1989 and 6% interest 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 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.