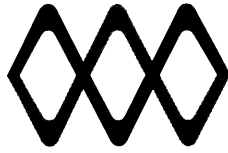


Teachers Retirement Association Fund
ACTUARIAL VALUATION REPORT

July 1, 1996



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December 13, 1996

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, 1996.

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 June 13, 1996.

Respectfully submitted,

MILLIMAN & ROBERTSON, INC.

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Teachers Retirement Association Fund

Table of Contents

	<u>Page</u>
REPORT HIGHLIGHTS	1
COMMENTARY	
Purpose	2
Report Highlights	2
Asset Information	2
Actuarial Balance Sheet	3
GASB Disclosure	3
Actuarial Cost Method	4
Sources of Actuarial Gains and Losses	4
Contribution Sufficiency	4
Changes in Actuarial Assumptions	5
Changes in Plan Provisions	5
ASSET INFORMATION	
Table 1 - Accounting Balance Sheet	6
Table 2 - Change in Assets Available for Benefits	7
MEMBERSHIP DATA	
Table 3 - Active Members	8
Table 4 - Service Retirements	9
Table 5 - Survivors	10
Table 6 - Disability Retirements	11
Table 7 - Reconciliation of Members	12
Table 8 - Actuarial Balance Sheet	13
Table 9 - Determination of Unfunded Actuarial Accrued Liability (UAAL) and Supplemental Contribution Rate	14
Table 10 - Changes in Unfunded Actuarial Accrued Liability (UAAL)	15
Table 11 - Determination of Contribution Sufficiency	16

Teachers Retirement Association Fund

Table of Contents

(Continued)

	<u>Page</u>
ACTUARIAL ASSUMPTIONS	
Table 12 - Summary of Actuarial Assumptions and Methods	17
BASIC	
<i><u>Membership Data</u></i>	
Table 3A - Active Members as of June 30, 1996	22
Table 4A - Service Retirements as of June 30, 1996	23
Table 5A - Survivors as of June 30, 1996	24
Table 6A - Disability Retirements as of June 30, 1996	25
<i><u>Funding Status</u></i>	
Table 11A - Determination of Contribution Sufficiency	26
<i><u>Plan Provisions</u></i>	
Table 13A - Summary of Plan Provisions	27
COORDINATED	
<i><u>Membership Data</u></i>	
Table 3B - Active Members as of June 30, 1996	33
Table 4B - Service Retirements as of June 30, 1996	34
Table 5B - Survivors as of June 30, 1996	35
Table 6B - Disability Retirements as of June 30, 1996	36
<i><u>Funding Status</u></i>	
Table 11B - Determination of Contribution Sufficiency	37
<i><u>Plan Provisions</u></i>	
Table 13B - Summary of Plan Provisions	38

Teachers Retirement Association Fund

Report Highlights

(dollars in thousands)

	07/01/95 Valuation	07/01/96 Valuation
A. CONTRIBUTIONS (Table 11)		
1. Statutory Contributions - Chapter 354 % of Payroll	14.66%	14.66%
2. Required Contributions - Chapter 356 % of Payroll	14.30%	12.78%
3. Sufficiency (Deficiency): (A.1. - A.2.)	0.36%	1.88%
B. FUNDING RATIOS		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$8,348,124	\$9,541,221
b. Current Benefit Obligations (Table 8)	\$9,049,649	\$9,696,539
c. Funding Ratio: (a/b)	92.25%	98.40%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$8,348,124	\$9,541,221
b. Actuarial Accrued Liability (Table 9)	\$9,717,623	\$10,366,168
c. Funding Ratio: (a/b)	85.91%	92.04%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$12,234,567	\$13,494,541
b. Current and Expected Future Benefit Obligations	\$12,095,200	\$12,769,666
c. Funding Ratio: (a/b)	101.15%	105.68%
C. PLAN PARTICIPANTS		
1. Active Members		
a. Number (Table 3)	67,558	68,490
b. Projected Annual Earnings	\$2,325,059	\$2,391,385
c. Average Annual Earnings (Actual \$)	\$34,416	\$34,916
d. Average Age	42.9	42.9
e. Average Service	12.5	12.4
2. Others		
a. Service Retirements (Table 4)	21,458	22,434
b. Survivors (Table 5)	1,331	1,464
c. Disability Retirements (Table 6)	379	409
d. Deferred Retirements (Table 7)	5,103	5,767
e. Terminated Other Non-vested (Table 7)	16,411	16,444
f. Total	44,682	46,518

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 98.40%. The corresponding ratio for the prior year was 92.25%.
- ° 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 1996 the ratio is 92.04%, which is an increase from the 1995 value of 85.91%.
- ° The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This year's ratio of 105.68% verifies that the current statutory contributions are sufficient.

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, 1996 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	\$4,557,152,000
Current Employees	
Accumulated employee contributions including allocated investment income	\$2,751,671,000
Employer-financed vested	2,130,684,000
Employer-financed nonvested	<u>257,032,000</u>
Total Pension Benefit Obligation	\$9,696,539,000
Net Assets Available for Benefits at Cost	\$9,385,745,000
Total Benefit Obligation less Assets	\$310,794,000
Funded Ratio	96.79%

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 5.00% 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 sufficiency since the Statutory Contribution Rate is 14.66% compared to the Required Contribution Rate of 12.78%.

Changes in Actuarial Assumptions

There were no changes in Actuarial Assumptions for the current valuation.

Changes in Plan Provisions

There were no change in Plan Provisions which affected plan costs for the current valuation.

TABLE 1

Teachers Retirement Association Fund

Accounting Balance Sheet*(dollars in thousands)*

JULY 1, 1996

	Market Value	Cost Value
A. ASSETS		
1. Cash, Equivalents, Short-term Securities	\$47,272	\$47,272
2. Investments		
a. Fixed Income	1,296,139	1,324,182
b. Equity	4,044,356	3,541,645
c. Real Estate	219,116	227,357
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	4,225,515	4,225,515
4. Other	41,100	41,100
B. TOTAL ASSETS	<u>\$9,873,498</u>	<u>\$9,407,071</u>
C. AMOUNTS CURRENTLY PAYABLE	\$21,326	\$21,326
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$1,164,651	\$1,164,651
2. Employer Reserves	4,462,006	3,995,579
3. MPRIF Reserves	4,225,515	4,225,515
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	<u>\$9,852,172</u>	<u>\$9,385,745</u>
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	<u>\$9,873,498</u>	<u>\$9,407,071</u>
<hr/>		
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$9,385,745
2. Market Value (D5)	\$9,852,172	
3. Cost Value (D5)	9,385,745	
4. Market Over Cost: (F2-F3)	\$466,427	
5. 1/3 of Market Over Cost: (F4)/3		155,476
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		<u>\$9,541,221</u>

TABLE 2

Teachers Retirement Association Fund

Change In Assets Available For Benefits
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

	<u>Market Value</u>	<u>Cost Value</u>
A. ASSETS AVAILABLE AT BEGINNING OF PERIOD	\$8,592,206	\$8,226,080
B. OPERATING REVENUES		
1. Member Contributions	\$148,051	\$148,051
2. Employer Contributions	184,495	184,495
3. Investment Income	809,189	809,189
4. MPRIF Income	412,604	412,604
5. Net Realized Gain (Loss)	0	0
6. Other	714	714
7. Net Change in Unrealized Gain (Loss)	<u>100,301</u>	<u>0</u>
8. Total Revenue	<u>\$1,655,354</u>	<u>\$1,555,053</u>
C. OPERATING EXPENSES		
1. Service Retirements	\$366,353	\$366,353
2. Disability Benefits	5,639	5,639
3. Survivor Benefits	6,081	6,081
4. Refunds	5,040	5,040
5. Investment Fees	7,819	7,819
6. Administrative Expenses	3,836	3,836
7. Other	<u>620</u>	<u>620</u>
8. Total Disbursements	<u>\$395,388</u>	<u>\$395,388</u>
D. OTHER CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF PERIOD	<u><u>\$9,852,172</u></u>	<u><u>\$9,385,745</u></u>

TABLE 3

Teachers Retirement Association Fund
ACTIVE MEMBERS AS OF JUNE 30, 1996

Age	Years of Service								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	1,457	142	0	0	0	0	0	0	1,599
25-29	2,967	4,541	643	0	0	0	0	0	8,151
30-34	870	2,751	3,164	436	1	0	0	0	7,222
35-39	1,024	1,831	1,962	2,119	494	0	0	0	7,430
40-44	1,037	1,920	1,779	1,348	3,000	816	0	0	9,900
45-49	827	1,734	1,992	1,320	2,323	4,372	1,682	0	14,250
50-54	461	892	929	987	1,166	1,677	4,187	750	11,049
55-59	234	373	374	499	666	851	1,858	1,716	6,571
60-64	130	161	166	134	204	284	476	386	1,941
65+	90	83	23	24	25	36	47	49	377
ALL	9,097	14,428	11,032	6,867	7,879	8,036	8,250	2,901	68,490

AVERAGE ANNUAL EARNINGS

Age	Years of Service								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	15,169	23,745	0	0	0	0	0	0	15,931
25-29	13,607	24,576	29,638	0	0	0	0	0	20,983
30-34	13,240	22,782	31,008	34,814	28,257	0	0	0	25,964
35-39	12,457	22,054	31,336	36,873	39,923	0	0	0	28,597
40-44	12,647	21,166	31,759	37,459	41,913	43,893	0	0	32,556
45-49	10,240	19,026	31,591	37,009	40,176	45,359	46,637	0	36,724
50-54	10,043	18,781	29,541	36,010	42,295	45,854	48,230	49,394	40,688
55-59	7,790	15,665	24,618	33,931	40,553	46,298	49,362	50,465	42,387
60-64	7,106	10,102	22,716	29,922	42,652	46,147	50,356	50,431	38,935
65+	9,729	5,921	21,149	27,033	40,937	43,318	54,551	50,325	26,830
ALL	12,816	21,927	30,727	36,376	41,232	45,432	48,319	50,181	32,937

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	117	316	339	250	325	365	399	146	2,256

TABLE 4

TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

Age	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	0	0	0	0	0	0	0	0
50-54	15	10	0	0	0	0	0	25
55-59	675	1,119	18	0	0	0	0	1,812
60-64	628	3,109	1,005	6	0	0	0	4,748
65-69	193	1,777	2,175	999	4	0	0	5,148
70-74	15	219	1,396	1,759	286	3	0	3,678
75-79	2	15	223	1,495	904	129	1	2,769
80-84	0	2	11	213	1,309	522	77	2,134
85+	0	1	1	4	132	1,312	670	2,120
ALL	1,528	6,252	4,829	4,476	2,635	1,966	748	22,434

AVERAGE ANNUAL BENEFIT

Age	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50	0	12,037	0	0	0	0	0	0
50-54	14,417	19,295	0	0	0	0	0	16,369
55-59	23,149	20,329	15,958	3,198	0	0	0	21,336
60-64	22,647	23,860	19,503	16,036	0	0	0	22,767
65-69	14,834	16,688	17,583	17,258	10,443	0	0	17,102
70-74	14,446	15,712	15,261	17,702	9,785	16,908	0	16,028
75-79	648	9,148	15,090	16,168	14,758	7,805	14,708	15,182
80-84	0	833	9,360	14,381	14,382	11,988	5,640	13,442
85+	0	743	4,558	2,792	10,813	10,357	7,690	9,521
ALL	21,692	20,850	17,169	16,917	13,827	10,633	7,489	17,165

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

Age	<1	1-4	5-9	10-14	15-19	20-24	25+	ALL
All	33,145	130,354	82,909	75,721	36,434	20,905	5,602	385,080

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	20	39	10	1	1	0	0	71
50-54	11	35	5	1	0	1	0	53
55-59	14	62	18	6	1	0	1	102
60-64	17	98	52	18	7	4	1	197
65-69	18	108	84	42	17	4	4	277
70-74	13	115	104	58	21	6	3	320
75-79	21	86	66	49	15	7	7	251
80-84	5	34	37	17	23	7	9	132
85+	3	9	14	9	12	7	7	61
ALL	122	586	390	201	97	36	32	1,464

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	14,961	10,725	3,840	1,769	2,401	0	0	10,705
50-54	9,772	12,483	10,102	2,462	0	5,317	0	11,372
55-59	16,556	13,768	8,857	8,136	14,072	0	3,623	12,857
60-64	15,387	17,049	12,515	13,889	11,838	7,200	4,902	14,973
65-69	11,604	15,230	13,812	14,811	15,824	13,046	3,708	14,340
70-74	13,019	14,617	14,432	14,512	15,858	7,644	3,337	14,318
75-79	14,962	15,347	15,120	14,880	16,775	15,953	6,471	15,018
80-84	14,751	11,804	11,835	13,762	14,093	8,978	4,502	11,928
85+	7,614	14,887	9,906	6,759	7,882	10,070	5,493	9,178
ALL	13,844	14,609	13,166	13,884	14,142	10,477	4,926	13,717

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><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	1,689	8,561	5,135	2,791	1,372	377	158	20,082

TABLE 6

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

Age	YEARS DISABLED							ALL
	<u><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	4	40	13	2	1	0	0	60
50-54	11	34	12	6	2	0	0	65
55-59	16	65	30	12	5	1	0	129
60-64	4	50	58	14	5	3	0	134
65-69	0	8	9	2	2	0	0	21
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	35	197	122	36	15	4	0	409

AVERAGE ANNUAL BENEFIT

Age	YEARS DISABLED							ALL
	<u><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	9,304	9,067	6,304	4,669	3,281	0	0	8,241
50-54	10,423	12,785	9,503	20,409	4,743	0	0	12,236
55-59	17,994	14,279	12,961	8,889	8,487	2,711	0	13,618
60-64	17,895	17,828	16,236	14,947	11,618	6,849	0	16,362
65-69	0	19,715	16,376	18,938	9,089	0	0	17,198
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	14,610	14,084	13,720	13,489	8,764	5,814	0	13,692

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

Age	<u><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	511	2,775	1,674	486	132	23	0	5,600

TABLE 7

Teachers Retirement Association Fund

Reconciliation Of Members

	Actives	Terminated	
		Deferred Retirement	Other Non-Vested
A. ON JUNE 30, 1995	67,558	5,103	16,411
B. ADDITIONS	7,176	919	3,586
C. DELETIONS			
1. Service Retirement	(1,314)	(207)	0
2. Disability	(80)	0	0
3. Death	(60)	(48)	0
4. Terminated - Deferred	(4,222)	0	0
5. Terminated - Refund	(575)	0	(1,189)
6. Terminated - Other Non-Vested	0	0	(1,069)
7. Returned as Active	0	0	(1,284)
8. Transferred to Other Fund	0	0	0
D. DATA ADJUSTMENTS	7	0	(11)
Vested	51,116		
Non-Vested	17,374		
E. TOTAL ON JUNE 30, 1996	68,490	5,767	16,444

	Recipients		
	Retirement Annuitants	Disabled	Survivors
A. ON JUNE 30, 1995	21,458	379	1,331
B. ADDITIONS	1,533	87	186
C. DELETIONS			
1. Service Retirement	0	(17)	0
2. Death	(532)	(26)	(18)
3. Annuity Expired	(2)	0	(55)
4. Returned as Active	0	(8)	0
D. DATA ADJUSTMENTS	(23)	(6)	20
E. TOTAL ON JUNE 30, 1996	22,434	409	1,464

TABLE 8

Teachers Retirement Association Fund

Actuarial Balance Sheet*(dollars in thousands)*

JULY 1, 1996

A. CURRENT ASSETS (TABLE 1, F6)				\$9,541,221
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Statutory Supplemental Contributions (See Table 11)				\$1,549,822
2. Present Value of Future Normal Costs				2,403,498
3. Total Expected Future Assets				<u>\$3,953,320</u>
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				<u>\$13,494,541</u>
D. CURRENT BENEFIT OBLIGATIONS	Non-Vested	Vested	Total	
1. Benefit Recipients				
a. Retirement Annuities		\$4,080,617	\$4,080,617	
b. Disability Benefits		71,124	71,124	
c. Surviving Spouse and Child Benefits		167,587	167,587	
2. Deferred Retirements with Future Augmentation		222,272	222,272	
3. Former Members without Vested Rights		15,552	15,552	
4. Active Members				
a. Retirement Annuities	12,506	4,707,524	4,720,030	
b. Disability Benefits	179,896	0	179,896	
c. Survivor's Benefits	63,642	0	63,642	
d. Deferred Retirements	988	119,788	120,776	
e. Refund Liability Due to Death or Withdrawal	0	55,043	55,043	
5. Total Current Benefit Obligations	<u>\$257,032</u>	<u>\$9,439,507</u>	<u>\$9,696,539</u>	
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				<u>\$3,073,127</u>
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				<u>\$12,769,666</u>
G. CURRENT UNFUNDED ACTUARIAL LIABILITY (D5-A)				\$155,318
H. CURRENT AND FUTURE UNFUNDED ACTUARIAL LIABILITY (F-C)				(\$724,875)

TABLE 9

Teachers Retirement Association Fund

**Determination Of Unfunded Actuarial Accrued Liability (UAAL)
And Supplemental Contribution Rate**
(dollars in thousands)

JULY 1, 1996

	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	\$7,528,366	\$1,881,151	\$5,647,215
b. Disability Benefits	294,720	117,371	177,349
c. Survivor's Benefit	99,021	37,057	61,964
d. Deferred Retirements	187,931	99,834	88,097
e. Refunds Due to Death or Withdrawal	102,475	268,085	(165,610)
f. Total	<u>\$8,212,513</u>	<u>\$2,403,498</u>	<u>\$5,809,015</u>
2. Deferred Retirements With Future Augmentation	222,272		222,272
3. Former Members Without Vested Rights	15,552		15,552
4. Annuitants in MPRIF	4,225,515		4,225,515
5. Recipients Not in MPRIF	<u>93,814</u>		<u>93,814</u>
6. Total	<u>\$12,769,666</u>	<u>\$2,403,498</u>	<u>\$10,366,168</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$10,366,168
2. Current Assets (Table 1, F6)			<u>9,541,221</u>
3. UAAL (B1-B2)			<u>\$824,947</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2020			\$38,648,937
2. Supplemental Contribution Rate (B3/C1)			2.13%

Teachers Retirement Association Fund

Changes In Unfunded Actuarial Accrued Liability (UAAL)
(dollars in thousands)

YEAR ENDING JUNE 30, 1996

A. UAAL AT BEGINNING OF YEAR	\$1,369,499
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$250,003
2. Contribution	(332,547)
3. Interest on A, B1 and B2	112,899
4. Total (B1+B2+B3)	\$30,355
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$1,399,854
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	(\$143,217)
2. Investment Return	(437,398)
3. MPRIF Mortality	(994)
4. Mortality of Other Benefit Recipients	11,477
5. Other Items	(4,775)
6. Total	(\$574,907)
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTION (C+D6)	\$824,947
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)	<u>\$824,947</u>

TABLE 11

Teachers Retirement Association Fund

Determination Of Contribution Sufficiency*(dollars in thousands)*

JULY 1, 1996

	Percent of Payroll	Dollar Amount
A. STATUTORY CONTRIBUTIONS - CHAPTER 354		
1. Employee Contributions	6.51%	\$155,599
2. Employer Contributions	8.15%	194,818
3. Total	14.66%	\$350,417
B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	8.27%	\$197,843
b. Disability benefits	0.50%	11,914
c. Survivors	0.16%	3,933
d. Deferred Retirement Benefits	0.39%	9,286
e. Refunds Due to Death or Withdrawal	1.17%	28,076
f. Total	10.49%	\$251,052
2. Supplemental Contribution Amortization by July 1, 2020 of UAAL	2.13%	50,937
3. Allowance for Expenses	0.16%	3,826
4. Total	12.78%	\$305,815
C. CONTRIBUTION SUFFICIENCY (DEFICIENCY) [A3-B4]	1.88%	\$44,602

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$2,391,385.

Teachers Retirement Association Fund

Summary of Actuarial Assumptions and Methods

<i>Interest:</i>	Pre-Retirement: 8.5% per annum Post-Retirement: 8.5% per annum
<i>Benefit Increases After Retirement:</i>	Payment of earnings on retired reserves in excess of 5% accounted for by 5% post-retirement assumptions.
<i>Salary Increases:</i>	Reported salary for prior fiscal year, with new hires annualized, increased according to the table below to current fiscal year and annually for each future year.
<i>Mortality:</i>	Pre-Retirement: Male - 1983 Group Annuity Mortality Table for males set back eight years. Female - 1983 Group Annuity Mortality Table for females set back four years. Post-Retirement: Male - Same as above except set back four years. Female - Same as above except set back two years. Post-Disability: Male - 1977 Railroad Retirement Board Mortality for Disabled Annuitants up to retirement age. Female - 1977 Railroad Retirement Board Mortality for Disabled Annuitants up to retirement age. Revert to post-retirement assumption at retirement.
<i>Retirement Age:</i>	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.

TABLE 12
(Continued)

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

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

Special Consideration: Married Members assumed to elect subsidized joint and survivor form of annuity as follows:

Males - 15% elect 50% J&S option
 0% elect 75% J&S option
 50% elect 100% J&S option

Females - 10% elect 50% J&S option
 0% elect 75% 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.

TABLE 12
(Continued)

<i>Asset Valuation Method:</i>	Cost Value plus one-third Unrealized Gains or Losses.
<i>Payment on the Unfunded Actuarial Accrued Liability:</i>	A level percentage of payroll each year to the statutory amortization date assuming payroll increases of 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:

<u>Age</u>	<u>Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>		<u>Salary Increases</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	3	1	600	600	4	4	0	0	7.25%
21	3	2	600	600	4	4	0	0	7.25
22	3	2	600	600	4	4	0	0	7.25
23	3	2	600	600	5	5	0	0	7.20
24	3	2	600	600	5	5	0	0	7.15
25	3	2	600	600	5	5	0	0	7.10
26	4	2	600	600	5	5	0	0	7.05
27	4	2	600	600	5	5	0	0	7.00
28	4	2	600	600	5	5	0	0	7.00
29	4	3	580	580	5	5	0	0	7.00
30	4	3	565	565	6	6	0	0	7.00
31	4	3	540	540	6	6	0	0	7.00
32	4	3	520	520	6	6	0	0	7.00
33	5	3	500	500	6	6	0	0	7.00
34	5	3	480	480	6	6	0	0	7.00
35	5	4	440	440	6	6	0	0	7.00
36	5	4	370	370	7	7	0	0	7.00
37	6	4	330	330	7	7	0	0	7.00
38	6	4	280	280	8	8	0	0	6.90
39	6	5	240	240	8	8	0	0	6.80
40	7	5	210	210	8	8	0	0	6.70
41	7	5	195	195	9	9	0	0	6.60
42	8	6	185	185	9	9	0	0	6.50
43	9	6	175	175	10	10	0	0	6.35
44	9	7	160	160	10	10	0	0	6.20
45	10	7	145	145	11	11	0	0	6.05
46	10	8	130	130	12	12	0	0	5.90
47	11	8	115	115	13	13	0	0	5.75
48	12	9	100	100	14	14	0	0	5.70
49	14	10	85	85	16	16	0	0	5.65

TABLE 12
(Continued)

Teachers Retirement Association Fund

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

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

<u>Age</u>	<u>Preretirement Death</u>		<u>Withdrawal</u>		<u>Disability</u>		<u>Retirement</u>		<u>Salary Increases</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>	
50	15	11	70	70	17	17	0	0	5.60%
51	17	12	55	55	19	19	0	0	5.55
52	19	14	40	40	22	22	0	0	5.50
53	22	15	25	25	26	26	0	0	5.45
54	25	16	10	10	30	30	0	0	5.40
55	28	18	0	0	36	36	0	0	5.35
56	31	19	0	0	41	41	0	0	5.30
57	35	21	0	0	47	47	0	0	5.25
58	39	23	0	0	52	52	0	0	5.25
59	43	25	0	0	58	58	0	0	5.25
60	48	28	0	0	63	63	0	0	5.25
61	52	31	0	0	69	69	0	0	5.25
62	57	34	0	0	0	0	10,000	10,000	5.25
63	61	38	0	0	0	0	0	0	5.25
64	66	42	0	0	0	0	0	0	5.25
65	71	47	0	0	0	0	0	0	5.25
66	77	52	0	0	0	0	0	0	5.25
67	84	58	0	0	0	0	0	0	5.25
68	92	64	0	0	0	0	0	0	5.25
69	101	71	0	0	0	0	0	0	5.25

**TABLE 3A
BASIC**

Teachers Retirement Association Fund
ACTIVE MEMBERS AS OF JUNE 30, 1996

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	1	0	1
55-59	0	0	0	0	0	1	5	15	21
60-64	0	0	0	0	0	0	4	44	48
65+	0	0	0	0	0	0	1	11	12
ALL	0	0	0	0	0	1	11	70	82

AVERAGE ANNUAL EARNINGS

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	54,569	0	54,569
55-59	0	0	0	0	0	9,811	53,309	43,825	44,463
60-64	0	0	0	0	0	0	38,907	46,209	45,601
65+	0	0	0	0	0	0	54,614	49,905	50,297
ALL	0	0	0	0	0	9,811	48,305	46,279	46,106

PRIOR FISCAL YEAR EARNINGS (IN THOUSANDS) BY YEARS OF SERVICE

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>ALL</u>
All	0	0	0	0	0	10	531	3,240	3,781

TABLE 4A
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><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	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0
55-59	6	80	4	0	0	0	0	90
60-64	18	412	275	5	0	0	0	710
65-69	11	146	463	412	3	0	0	1,035
70-74	1	25	197	574	133	3	0	933
75-79	0	1	37	388	357	75	1	859
80-84	0	1	1	49	438	240	63	792
85+	0	0	1	1	43	370	308	723
ALL	36	665	978	1,429	974	688	372	5,142

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><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	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0
55-59	31,103	34,936	14,824	0	0	0	0	33,786
60-64	29,081	33,600	28,011	17,338	0	0	0	31,206
65-69	24,600	25,626	28,142	27,362	8,985	0	0	27,384
70-74	1,112	23,482	25,464	26,911	14,297	16,908	0	24,655
75-79	0	6,328	22,072	25,016	19,744	10,976	14,708	21,439
80-84	0	514	2,278	22,315	19,958	14,516	6,155	17,310
85+	0	0	4,558	1,915	10,746	14,707	10,404	12,606
ALL	27,272	31,539	27,231	26,318	18,666	14,243	9,696	22,906

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

<u>Age</u>	<u><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	982	20,973	26,632	37,608	18,181	9,799	3,607	117,783

TABLE 5A
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	0	0	1	0	1	0	0	2
50-54	0	1	1	0	0	1	0	3
55-59	1	2	1	2	1	0	1	8
60-64	3	19	7	12	6	4	1	52
65-69	2	25	21	16	12	3	4	83
70-74	1	21	26	17	6	4	3	78
75-79	4	26	12	14	7	5	6	74
80-84	1	9	8	6	7	2	9	42
85+	1	3	5	2	2	1	4	18
ALL	13	106	82	69	42	20	28	360

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	0	0	14,490	0	2,401	0	0	8,446
50-54	0	34,917	16,931	0	0	5,317	0	19,055
55-59	14,762	18,209	19,295	16,337	14,072	0	3,623	15,105
60-64	21,925	23,285	22,017	16,817	13,538	7,200	4,902	18,828
65-69	10,047	23,815	18,792	19,231	16,643	11,993	3,708	18,896
70-74	33,911	25,739	23,964	16,883	16,353	9,894	3,337	20,926
75-79	18,603	22,467	27,520	25,421	21,383	18,236	6,846	21,981
80-84	49,267	17,611	10,062	19,672	14,213	5,822	4,502	13,285
85+	9,052	15,028	10,426	7,940	13,655	23,476	4,053	10,508
ALL	20,559	22,994	20,554	19,116	16,000	11,799	4,685	18,745

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><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	267	2,437	1,685	1,319	672	236	131	6,748

TABLE 6A
BASIC

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><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	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0
60-64	0	5	8	2	2	0	0	17
65-69	0	0	1	1	1	0	0	3
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	0	5	9	3	3	0	0	20

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><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	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0
60-64	0	31,948	34,275	27,880	18,221	0	0	30,950
65-69	0	0	34,916	27,190	15,439	0	0	25,848
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	0	31,948	34,346	27,650	17,294	0	0	30,185

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

<u>Age</u>	<u><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	0	160	309	83	52	0	0	604

**TABLE 11A
BASIC**

Teachers Retirement Association Fund

Determination Of Contribution Sufficiency
(dollars in thousands)

JULY 1, 1996

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 354		
1. Employee Contributions	10.50%	\$418
2. Employer Contributions	12.14%	483
3. Total	<u>22.64%</u>	<u>\$901</u>
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	14.35%	\$571
b. Disability benefits	0.80%	32
c. Survivors	0.40%	16
d. Deferred Retirement Benefits	0.25%	10
e. Refunds Due to Death or Withdrawal	2.66%	106
f. Total	<u>18.46%</u>	<u>\$735</u>

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$3,980.

Teachers Retirement Association Fund

Summary of Plan Provisions

GENERAL

Eligibility: 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.

No community college teacher is a Member if that person elects coverage under Sec. 354B.

Contributions:

Member: 10.5% of salary.

Employer: 12.14% 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, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.

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.

TABLE 13A
BASIC
(Continued)

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:

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 2.13% of Average Salary for each of the first 10 years of Allowable Service and 2.63% 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 under age 62 if 30 years of Allowable Service. No reduction if age plus years of Allowable Service totals 90;

OR

2.63% 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:

2.63% 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.

<i>Form of Payment:</i>	Life annuity. Actuarially equivalent options are: 50%, 75% or 100% joint and survivor with bounce back feature without additional reduction. 15 year certain and life. Guaranteed refund.
<i>Benefit Increases:</i>	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:

<i>Eligibility:</i>	Total and permanent disability before normal retirement age with three years of Allowable Service.
<i>Amount:</i>	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 \$25 per month.

TABLE 13A
BASIC
(Continued)

Payments stop at normal retirement age or the five year anniversary of the effective date of the disability benefit, whichever is later. Payments stop earlier if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment. If death occurs before retirement status, the surviving spouse and dependent children are eligible for survivor benefits.

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 or the five year anniversary of the effective date of the disability benefit, whichever is later.

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.

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:

<i>Eligibility:</i>	Active Member with 18 months of Allowable Service or Member receiving a disability benefit.
<i>Amount:</i>	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:

<i>Eligibility:</i>	Member or former Member with three years of Allowance Service who dies before retirement or disability benefits commence.
<i>Amount:</i>	Survivor's payment of the 100% joint and survivor benefit or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.
<i>Benefit Increases:</i>	Adjusted by TRA to provide same increase as MPRIF except surviving spouse optional annuity benefit increases which are paid from MPRIF.

Refund of Contributions:

<i>Eligibility:</i>	Member dies before receiving any retirement benefits and survivor benefits are not elected.
<i>Amount:</i>	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:

<i>Eligibility:</i>	Thirty days following termination of teaching service.
<i>Amount:</i>	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:

<i>Eligibility:</i>	Three years of Allowable Service.
<i>Amount:</i>	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.

SUMMARY OF SIGNIFICANT CHANGES

No significant changes were made for the current valuation.

**TABLE 3B
COORDINATED**

**Teachers Retirement Association Fund
ACTIVE MEMBERS AS OF JUNE 30, 1996**

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	1,457	142	0	0	0	0	0	0	1,599
25-29	2,967	4,541	643	0	0	0	0	0	8,151
30-34	870	2,751	3,164	436	1	0	0	0	7,222
35-39	1,024	1,831	1,962	2,119	494	0	0	0	7,430
40-44	1,037	1,920	1,779	1,348	3,000	816	0	0	9,900
45-49	827	1,734	1,992	1,320	2,323	4,372	1,682	0	14,250
50-54	461	892	929	987	1,166	1,677	4,186	750	11,048
55-59	234	373	374	499	666	850	1,853	1,701	6,550
60-64	130	161	166	134	204	284	472	342	1,893
65+	90	83	23	24	25	36	46	38	365
ALL	9,097	14,428	11,032	6,867	7,879	8,035	8,239	2,831	68,408

AVERAGE ANNUAL EARNINGS

<u>Age</u>	<u>Years of Service</u>								<u>ALL</u>
	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	
<25	15,169	23,745	0	0	0	0	0	0	15,931
25-29	13,607	24,576	29,638	0	0	0	0	0	20,983
30-34	13,240	22,782	31,008	34,814	28,257	0	0	0	25,964
35-39	12,457	22,054	31,336	36,873	39,923	0	0	0	28,597
40-44	12,647	21,166	31,759	37,459	41,913	43,893	0	0	32,556
45-49	10,240	19,026	31,591	37,009	40,176	45,359	46,637	0	36,724
50-54	10,043	18,781	29,541	36,010	42,295	45,854	48,228	49,394	40,687
55-59	7,790	15,665	24,618	33,931	40,553	46,339	49,350	50,529	42,381
60-64	7,106	10,102	22,716	29,922	42,652	46,147	50,452	50,989	38,769
65+	9,729	5,921	21,149	27,033	40,937	43,318	54,552	50,449	26,059
ALL	12,816	21,927	30,727	36,376	41,232	45,436	48,318	50,283	32,921

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

<u>Age</u>	<u><1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30+</u>	<u>ALL</u>
All	117	316	339	250	325	365	398	142	2,252

**TABLE 4B
COORDINATED**

TEACHERS RETIREMENT ASSOCIATION FUND

SERVICE RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><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	0	0	0	0	0	0	0	0
50-54	15	10	0	0	0	0	0	25
55-59	669	1,039	14	0	0	0	0	1,722
60-64	610	2,697	730	1	0	0	0	4,038
65-69	182	1,631	1,712	587	1	0	0	4,113
70-74	14	194	1,199	1,185	153	0	0	2,745
75-79	2	14	186	1,107	547	54	0	1,910
80-84	0	1	10	164	871	282	14	1,342
85+	0	1	0	3	89	942	362	1,397
ALL	1,492	5,587	3,851	3,047	1,661	1,278	376	17,292

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS RETIRED</u>							<u>ALL</u>
	<u><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	0	12,037	0	0	0	0	0	0
50-54	14,417	19,295	0	0	0	0	0	16,369
55-59	23,077	19,204	16,282	3,198	0	0	0	20,685
60-64	22,457	22,372	16,298	9,525	0	0	0	21,284
65-69	14,243	15,888	14,727	10,166	14,818	0	0	14,515
70-74	15,398	14,711	13,585	13,242	5,864	0	0	13,095
75-79	648	9,349	13,701	13,067	11,504	3,401	0	12,368
80-84	0	1,153	10,068	12,010	11,577	9,837	3,320	11,159
85+	0	743	0	3,084	10,846	8,649	5,382	7,925
ALL	21,557	19,578	14,613	12,508	10,990	8,689	5,305	15,457

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS RETIRED

<u>Age</u>	<u><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	32,163	109,382	56,275	38,112	18,254	11,105	1,995	267,282

**TABLE 5B
COORDINATED**

TEACHERS RETIREMENT ASSOCIATION FUND

SURVIVORS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	20	39	9	1	0	0	0	69
50-54	11	34	4	1	0	0	0	50
55-59	13	60	17	4	0	0	0	94
60-64	14	79	45	6	1	0	0	145
65-69	16	83	63	26	5	1	0	194
70-74	12	94	78	41	15	2	0	242
75-79	17	60	54	35	8	2	1	177
80-84	4	25	29	11	16	5	0	90
85+	2	6	9	7	10	6	3	43
ALL	109	480	308	132	55	16	4	1,104

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS SINCE DEATH</u>							<u>ALL</u>
	<u><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	14,961	10,725	2,657	1,769	0	0	0	10,771
50-54	9,772	11,823	8,395	2,462	0	0	0	10,911
55-59	16,694	13,620	8,243	4,036	0	0	0	12,665
60-64	13,986	15,549	11,037	8,032	1,636	0	0	13,591
65-69	11,798	12,645	12,152	12,091	13,860	16,205	0	12,390
70-74	11,278	12,133	11,255	13,530	15,660	3,142	0	12,188
75-79	14,105	12,261	12,365	10,663	12,743	10,246	4,222	12,107
80-84	6,122	9,714	12,324	10,538	14,040	10,240	0	11,294
85+	6,895	14,816	9,617	6,422	6,728	7,835	7,413	8,621
ALL	13,043	12,757	11,199	11,149	12,722	8,825	6,615	12,077

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<u>Age</u>	<u><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	1,422	6,123	3,449	1,472	700	141	27	13,333

**TABLE 6B
COORDINATED**

TEACHERS RETIREMENT ASSOCIATION FUND

DISABILITY RETIREMENTS AS OF JUNE 30, 1996

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><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	4	40	13	2	1	0	0	60
50-54	11	34	12	6	2	0	0	65
55-59	16	65	30	12	5	1	0	129
60-64	4	45	50	12	3	3	0	117
65-69	0	8	8	1	1	0	0	18
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	35	192	113	33	12	4	0	389

AVERAGE ANNUAL BENEFIT

<u>Age</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u><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	9,304	9,067	6,304	4,669	3,281	0	0	8,241
50-54	10,423	12,785	9,503	20,409	4,743	0	0	12,236
55-59	17,994	14,279	12,961	8,889	8,487	2,711	0	13,618
60-64	17,895	16,259	13,350	12,791	7,215	6,849	0	14,243
65-69	0	19,715	14,058	10,686	2,739	0	0	15,756
70-74	0	0	0	0	0	0	0	0
75-79	0	0	0	0	0	0	0	0
80-84	0	0	0	0	0	0	0	0
85+	0	0	0	0	0	0	0	0
ALL	14,610	13,619	12,078	12,201	6,632	5,814	0	12,845

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS DISABLED

<u>Age</u>	<u><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	511	2,615	1,365	403	80	23	0	4,997

Teachers Retirement Association Fund

Determination Of Contribution Sufficiency
(dollars in thousands)

JULY 1, 1996

	<u>Percent of Payroll</u>	<u>Dollar Amount</u>
A. STATUTORY CONTRIBUTIONS - CHAPTER 354		
1. Employee Contributions	6.50%	\$155,181
2. Employer Contributions	8.14%	194,335
3. Total	<u>14.64%</u>	<u>\$349,516</u>
 B. REQUIRED CONTRIBUTIONS - CHAPTER 356		
1. Normal Cost		
a. Retirement Benefits	8.26%	\$197,272
b. Disability benefits	0.50%	11,882
c. Survivors	0.16%	3,917
d. Deferred Retirement Benefits	0.39%	9,277
e. Refunds Due to Death or Withdrawal	1.17%	27,970
f. Total	<u>10.48%</u>	<u>\$250,318</u>

Note: Projected Annual Payroll for Fiscal Year Beginning on JULY 1, 1996 is \$2,387,405.

Teachers Retirement Association Fund Coordinated

Summary of Plan Provisions

GENERAL

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 or state university teacher is a Member except for purposes of Social Security coverage if that person elects coverage under Sec. 354B.

Contributions:

Member: 6.5% 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, any payments made in lieu of employer paid fringe benefits or expenses, and employer contributions to a Section 457 deferred compensation plan.

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.

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 1.13% of Average Salary for each of the first 10 years of Allowable Service and 1.63% 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

1.63% 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.

TABLE 13B
COORDINATED
(Continued)

First hired after June 30, 1989:

1.63% 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.

Form of Payment: Life annuity.

Actuarially equivalent options are:

50%, 75% 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 \$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.

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.

TABLE 13B
COORDINATED
(Continued)

mencement before normal retirement age unless an optional annuity plan is selected.

Payments stop at normal retirement age or the five year anniversary of the effective date of the disability benefit, whichever is later. Payments stop 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 with three years of Allowable Service who dies before retirement benefits commence.

Amount: Survivor's payment of the 100% joint and survivor benefit or an actuarial equivalent term certain annuity. If commencement is prior to age 65 (age 62 if 30 years of service), the benefit is reduced same as early retirement with half the applicable reduction factor used from age 55 to the actual commencement age. If no surviving spouse, then an actuarial equivalent dependent child benefit is paid to age 20 or for five years if longer.

TABLE 13B
COORDINATED
(Continued)

Benefit Increases: Same as for retirement.

Refund of Contributions:

Eligibility: Member dies before receiving any retirement benefits and the surviving spouse optional annuity is 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.

SUMMARY OF SIGNIFICANT CHANGES

No significant changes were made for the current valuation.