

**ST. PAUL TEACHERS' RETIREMENT FUND**

**ACTUARIAL VALUATION REPORT**

**JULY 1, 1986**

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

EMPLOYEE BENEFITS  
COMPENSATION PROGRAMS  
EMPLOYEE COMMUNICATIONS  
ADMINISTRATIVE SYSTEMS  
RISK MANAGEMENT  
INTERNATIONAL SERVICES

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OFFICES IN PRINCIPAL CITIES  
AROUND THE WORLD

December 2, 1986

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

RE: ST. PAUL TEACHERS' RETIREMENT FUND

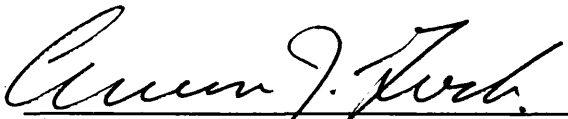
Gentlemen:

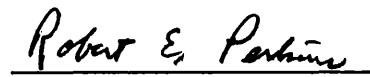
We have prepared an actuarial valuation of the Fund as of July 1, 1986 based on membership and financial data supplied by the Fund.

We certify that to the best of our knowledge and belief this actuarial valuation was performed 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 30, 1986 and amended on July 21 and July 28 of 1986.

Respectfully submitted,

THE WYATT COMPANY

  
Allan J. Grosh, FSA  
Consulting Actuary

  
Robert E. Perkins, FSA  
Consulting Actuary

# ST. PAUL TEACHERS' RETIREMENT FUND

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# ST. PAUL TEACHERS' RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>07/01/85 VALUATION</u>	<u>07/01/86 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	17.71%	17.18%
2. Required Contributions - Chapter 356 % of Payroll	21.95%	20.77%
3. Sufficiency (Deficiency) (A1-A2)	-4.24%	-3.59%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	\$159,874	\$193,015
b. Current Benefit Obligations (Table 8)	\$282,588	\$308,532
c. Funding Ratio (a/b)	56.57%	62.56%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$159,874	\$193,015
b. Actuarial Accrued Liability (Table 9)	\$307,407	\$337,777
c. Funding Ratio (a/b)	52.01%	57.14%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$340,343	\$382,493
b. Current and Expected Future Benefit Obligations	\$403,836	\$440,367
c. Funding Ratio (a/b)	84.28%	86.86%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3)	2,888	3,105
b. Projected Annual Earnings	\$75,852	\$84,932
c. Average Annual Earnings (Actual \$)	\$26,265	\$27,353
d. Average Age	42.9	42.7
e. Average Service	11.6	11.1
f. Additional Members on Leave of Absence	134	106
2. Others		
a. Service Retirements (Table 4)	963	991
b. Disability Retirements (Table 5)	28	34
c. Survivors (Table 6)	112	112
d. Deferred Retirements (Table 7)	36	30
e. Terminated Other Non-vested (Table 7)	1,770	1,852
f. Total	2,909	3,019

## ST. PAUL TEACHERS' RETIREMENT FUND

### COMMENTARY

#### Purpose

The purpose of this valuation is to determine the financial status of the Fund. 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 statutory contributions for the St. Paul Teachers' Retirement Fund are not sufficient for 1986 by an amount of 3.59% of payroll. According to this valuation a contribution rate of 20.77% is required to comply with Minnesota Law.

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

- o 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. This ratio is based on the Proposed Statement of Governmental Accounting Standards. This year's ratio is 62.56%. The corresponding ratio for the prior year was 56.57%.
- o 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. For 1986 the ratio is 57.14%, which is an

increase from the 1985 value of 52.01%.

- o The Projected Benefit Funding Ratio is a measure of the adequacy or deficiency in the contribution level. This ratio which is less than 100%, verifies that the current statutory contributions are inadequate.

### Asset Information

Beginning in 1984, changes in Section 356.215 of Minnesota Statutes require that the asset value used for actuarial purposes reflect a portion of the unrealized gains and losses. Only a portion of these gains and losses are considered because market values are typically volatile and could produce erratic changes in the contribution requirements from year to year.

The calculation of assets for actuarial purposes begins with the reporting of Total Assets by the Fund (Table 1, line B). These Total Assets, reduced by any Amounts Currently Payable (line C), produce the Assets Available for Benefits (line D5), which is the starting value for determining the Actuarial Value of Assets.

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

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.

The term MPRIF appears on some of the tables with a corresponding value of zero. MPRIF stands for Minnesota Post Retirement Investment Fund, which is used by many of the public funds. For purposes of consistency all of the actuarial reports follow the same format.

#### **Membership Data**

Tables 3 through 6 summarize statistical information on members by category. Active members are grouped by age and completed years of service in Table 3. The earnings shown for these members are for the prior fiscal year.

The service retirements are shown in Table 4 and disabled members are shown in Table 5. Seven retirees receiving disability benefits were categorized as disabilities rather than service retirees in this year's valuation. There were no new disability benefits granted. The survivors category (Table 6) includes spouses and children of deceased members.

The reconciliation of active members in Tables 7 and 15 includes members on leave of absence.

#### **Actuarial Balance Sheet**

An actuarial balance sheet is required by Section 356.215, Subdivision 4f of Minnesota Law. This balance sheet (Table 8) establishes a method for evaluating both current and future levels of funding.

Current funding levels are evaluated by comparing Current Assets on line A to Current Benefit Obligations on line D5. The difference between the obligations



and the assets is shown as Current Unfunded Liability on line G.

The measurement of the Current Benefit Obligation is based on the Proposed Statement of Governmental Accounting Standards published by the Governmental Accounting Standards Board (GASB) in August 1985. This value is known as the Actuarial Present Value of Credited Projected Benefits.

The first step in the GASB calculation for active members involves projecting salaries and service to determine future benefits payable under the plan and then discounting those projected benefits to the date of the valuation. The second step is to determine the discounted value of benefits for the non-active members. For those non-active members whose benefits have not commenced, the liability includes augmentation of benefits to date of commencement. The result of the first two steps is shown on line F, Total Current and Expected Future Benefit Obligations.

The third step is to determine the portion that represents Current Benefit Obligations. In the case of active members the Current Benefit Obligation is computed by attributing an equal benefit amount to each year of credited and expected future employee service. For all others, their entire liability is considered a Current Benefit Obligation.

Current and future funding levels are evaluated by comparing Current and Future Expected Assets on line C to Current and Expected Future Benefit Obligations on line F. The difference between the obligations and the assets is shown as the Current and Future Unfunded Liability on line H.

Since line F has already been calculated, the remaining step is to determine the Expected Future Assets. The statutory contribution rate in excess of the combined normal cost rate and expense rate is first calculated. The amount of assets for line B1 can be determined by projecting from the valuation date to the amortization date (the date for paying off all unfunded liabilities) on the assumption that total payroll is increasing at 6.5% annually and then discounted to the date of the valuation.

The Current Unfunded Liability, line G, is a measurement of the status of the funding to the date of the valuation. The Current and Future Unfunded Liability is a measurement of the adequacy of the current statutory contribution level.

#### Contribution Sufficiency

The approach used by the State of Minnesota to determine contribution sufficiency is the Entry Age Normal 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) shows similarities and differences. The similarity is that both approaches calculate the value of all future benefits the same way. This can be verified by comparing line F of Table 8 to line A6, column 1, of Table 9. The difference arises from the technique 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.

An Unfunded Actuarial Accrued Liability is computed under the Entry Age Normal 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. Prior to 1984 these payments were calculated to be a level dollar amount similar to a fixed interest rate mortgage. The method of funding was changed in 1984 to produce a series of payments that remain a constant percentage of payroll each year.

Under this new approach the payments will increase 6.5% each year since 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.

#### Projected Cash Flow

Table 12 illustrates the anticipated cash flow over the amortization period. The cash flow begins with the Current Assets. Contributions are then added based on the present statutory rates for employers and employees. As members become eligible for payments, disbursements are made from the Fund.

This projected cash flow assumes that future payrolls increase by 6.5%. For purposes of this table only, new members are assumed to be hired in order to replace those who terminate from the active group. This open group method provides a more realistic picture of future cash flow. The statutory interest rate of 8% is used to project future investment return. The assumed bonus

payment of 1% has been taken out of year end assets and added to the disbursements in the following year.

### Plan Provisions

The eligibility for the Surviving Spouse Optional Annuity for Coordinated Members has been changed by decreasing the age requirement from age 55 to age 50. However, the earliest age for benefits to commence remains age 55. As a result, the increase in the Actuarial Accrued Liability (Table 10, line F) is less than 0.1%.

### Basic and Coordinated

Table 2 allocates the Current Assets between the Basic and Coordinated Programs based on information provided by the Fund except for expenses which were allocated in proportion to the Current Assets at the beginning of the year. Additional tables at the end of this report provide information required by Section 354A.41 of Minnesota Statutes.

The Statutes also require the disclosure of the contribution required to meet the interest at the assumed rate on the Actuarial Unfunded Accrued Liability. The following table compares the required contribution which funds the Unfunded by the year 2009 as a level percentage of payroll to the contribution which provides for interest on the Unfunded. As noted in the section on Contribution Sufficiency, the amount of the Unfunded will increase under the amortization approach because payments for the next several years will not be sufficient to cover interest.

	<u>Required Contribution Rate</u>	
	<u>Amortization of Unfunded</u>	<u>Interest on Unfunded</u>
Basic	25.95%	31.04%
Coordinated	8.48%	8.73%
Combined	20.77%	24.42%

TABLE 1

## ST. PAUL TEACHERS' RETIREMENT FUND

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

July 1, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$15,391	\$15,391
2. Investments		
a. Fixed Income	80,155	71,121
b. Equity	135,124	77,901
c. Real Estate	729	729
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	0	0
4. Other	6,695	6,695
	-----	-----
B. TOTAL ASSETS	\$238,094	\$171,837
	=====	=====
C. AMOUNTS CURRENTLY PAYABLE	\$907	\$907
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$49,209	\$49,209
2. Employer Reserves	187,978	121,721
3. MPRIF Reserves	0	0
4. Non-MPRIF Reserves	0	0
	-----	-----
5. Total Assets Available for Benefits	\$237,187	\$170,930
	-----	-----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	\$238,094	\$171,837
	=====	=====
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$170,930
2. Market Value (D5)	\$237,187	
3. Cost Value (D5)	170,930	
	-----	
4. Market Over Cost (F2-F3)	\$66,257	
5. 1/3 of Market Over Cost(F4)/3		22,085
		-----
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		\$193,015
		=====

TABLE 2

## ST. PAUL TEACHERS' RETIREMENT FUND

CHANGES IN ASSETS AVAILABLE FOR BENEFITS AND ASSET ALLOCATION  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF YEAR	\$180,680	\$149,471
B. OPERATING REVENUES		
1. Member Contributions	\$5,795	\$5,795
2. Employer Contributions	8,506	8,506
3. Investment Income	12,726	12,726
4. MPRIF Income	0	0
5. Net Realized Gain (Loss)	6,390	6,390
6. Other	0	0
7. Net Change in Unrealized Gain (Loss)	35,048	0
	-----	-----
8. Total Revenue	\$68,465	\$33,417
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$10,162	\$10,162
2. Disability Benefits	461	461
3. Survivor Benefits	644	644
4. Refunds	376	376
5. Expenses	315	315
6. Other	0	0
	-----	-----
7. Total Disbursements	\$11,958	\$11,958
	-----	-----
D. CHANGES IN RESERVES	0	0
E. ASSETS AVAILABLE AT END OF YEAR	\$237,187	\$170,930
	=====	=====

TABLE 2  
(cont)

## ST. PAUL TEACHERS' RETIREMENT FUND

CHANGES IN ASSETS AVAILABLE FOR BENEFITS AND ASSET ALLOCATION  
(DOLLARS IN THOUSANDS)

YEAR ENDING JUNE 30, 1986

	<u>BASIC</u>	<u>COORDINATED</u>	<u>TOTAL</u>
F. BEGINNING OF YEAR			
1. Current Assets	\$151,838	\$8,036	\$159,874
2. MPRIF Reserves	0	0	0
3. Allocable Assets(A1-A2)	151,838	8,036	159,874
G. RECEIPTS			
1. Member Contributions	4,715	1,080	5,795
2. Employer Contributions	7,427	1,080	8,507
3. Other	0	0	0
4. Total	12,142	2,160	14,302
H. DISBURSEMENTS			
1. MPRIF New Annuitants	0	0	0
2. Non-MPRIF Benefits	11,218	49	11,267
3. Refunds	230	146	376
4. Expenses	299 *	16 *	315
5. Other	0	0	0
6. Total	11,747	211	11,958
I. EXPECTED INVESTMENT RETURN 8% OF (F3+.5XG4-.5XH6)	12,163	721	12,884
J. ALLOCATION OF REMAINING ASSETS IN PROPORTION TO LINE I	16,911	1,002	17,913
K. END OF YEAR			
1. Allocable Assets	181,307	11,708	193,015
2. MPRIF Reserves	0	0	0
3. Current Assets	181,307	11,708	193,015

\* Allocated by Wyatt



TABLE 3

## ST. PAUL TEACHERS' RETIREMENT FUND

## ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	73	26							99
25-29	126	106	26						258
30-34	106	116	134	18					374
35-39	71	97	147	132	136				583
40-44	64	79	79	83	193	51			549
45-49	40	45	54	49	118	100	39		445
50-54	27	35	44	38	80	58	81	26	389
55-59	16	18	23	18	40	40	44	62	261
60-64	11	7	11	8	22	19	17	25	120
65+	7	2	3		2	5	3	5	27
TOTAL	541	531	521	346	591	273	184	118	3,105

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	4,797	18,857							8,490
25-29	4,347	19,362	21,359						12,230
30-34	3,706	18,269	21,874	26,931					15,850
35-39	4,464	19,202	25,334	29,410	34,561				24,848
40-44	4,124	19,555	29,697	34,626	36,163	36,724			28,927
45-49	3,383	19,262	30,298	33,698	36,651	38,968	38,362		31,477
50-54	2,453	18,163	26,781	34,597	35,941	38,002	37,805	39,481	31,782
55-59	3,127	16,150	26,327	30,774	35,277	37,961	38,407	41,875	33,394
60-64	1,611	9,720	22,853	31,678	35,153	37,889	37,773	41,015	31,261
65+	1,866	9,725	13,626		38,031	33,904	33,378	40,162	22,960
ALL	3,982	18,738	25,468	31,833	35,771	38,028	37,992	41,093	25,684

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

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
2,154	9,950	13,269	11,014	21,140	10,382	6,991	4,849	79,749

TABLE 4

## ST. PAUL TEACHERS' RETIREMENT FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<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								0
50-54								0
55-59	30	38	1					69
60-64	20	126	30					176
65-69	9	78	74	4				165
70-74	1	11	104	55	2			173
75-79			4	101	21	4		130
80-84				35	74	22	13	144
85+					23	37	74	134
TOTAL	60	253	213	195	120	63	87	991

## AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							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								0
50-54								0
55-59	17,257	13,240	17,019					15,042
60-64	17,509	15,974	10,381					15,195
65-69	15,616	13,541	13,484	8,307				13,502
70-74	7,739	15,974	9,409	9,013	5,251			9,643
75-79			8,267	8,003	5,106	3,212		7,396
80-84				8,714	5,419	4,292	2,774	5,809
85+					5,064	4,309	3,505	3,995
ALL	16,936	14,813	10,976	8,422	5,293	4,233	3,396	10,032

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
1,016	3,748	2,338	1,642	635	267	295	9,941

TABLE 5

## ST. PAUL TEACHERS' RETIREMENT FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1986

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>TOTAL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50		1	1					2
50-54		2	1					3
55-59		4	2	2				8
60-64		3	1					4
65-69		3	4	2				9
70-74			1	2	1			4
75-79					1			1
80-84					1		2	3
85+								0
TOTAL	0	13	10	6	3	0	2	34

## AVERAGE ANNUAL BENEFIT

<u>AGE</u>	<u>YEARS DISABLED</u>							<u>ALL</u>
	<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	
<50		16,405	9,709					13,057
50-54		23,007	14,929					20,314
55-59		22,284	8,588	12,408				16,391
60-64		24,578	17,030					22,691
65-69		12,792	16,732	12,332				14,441
70-74			12,951	7,389	6,228			8,489
75-79					4,400			4,400
80-84					3,482		2,252	2,662
85+								0
TOTAL	0	20,282	13,872	10,710	4,703	0	2,252	14,272

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<u>&lt;1</u>	<u>1-4</u>	<u>5-9</u>	<u>10-14</u>	<u>15-19</u>	<u>20-24</u>	<u>25+</u>	<u>TOTAL</u>
0	263	139	64	14	0	5	485

TABLE 6

## ST. PAUL TEACHERS' RETIREMENT FUND

## SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		5	9		1			15
50-54		2						2
55-59	2	2	2					6
60-64		6	5	2				13
65-69	2	9	5	4				20
70-74		5	5	1				11
75-79	3	9	5	2	3	1		23
80-84		7	2	2			2	13
85+		3	1	4	1			9
TOTAL	7	48	34	15	5	1	2	112

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		6,829	4,707		3,350			5,324
50-54		6,275						6,275
55-59	21,630	8,841	6,882					12,451
60-64		8,559	6,678	3,210				7,012
65-69	8,486	5,422	7,086	4,982				6,056
70-74		8,841	7,567	3,547				7,781
75-79	2,996	5,308	6,909	3,248	2,080	1,371		4,583
80-84		4,718	7,864	3,406			2,064	4,592
85+		6,873	1,102	2,840	4,734			4,202
ALL	9,888	6,462	6,299	3,638	2,865	1,371	2,064	5,964

## TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
69	311	214	55	14	1	4	668

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**RECONCILIATION OF MEMBERS**

**TABLE 7**

		<u>TERMINATED</u>	
	<u>ACTIVES</u>	<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	3,022	36	1,770
B. Additions	530	1	272
C. Deletions:			
1. Service Retirement	(54)	(11)	
2. Disability	0		
3. Death	(2)	(1)	
4. Terminated-Deferred	0		
5. Terminated-Refund	(60)	0	(94)
6. Terminated-Other Non-vested	(272)		
7. Returned as Active		0	0
D. Data Adjustments	47	5	(96)
	Vested		
	Non-Vested		
	1,565		
	1,646		
E. Total on June 30, 1986	3,211	30	1,852

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	963	28	112
B. Additions	66	0	7
C. Deletions:			
1. Service Retirement		(1)	
2. Death	(35)	0	(4)
3. Annuity Expired	0	0	(3)
4. Returned as Active	0	0	
D. Data Adjustments	(3)	7	0
E. Total on June 30, 1986	991	34	112

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 8

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 1, F6)				\$193,015
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				86,888
2. Present Value of Future Normal Costs				102,590
3. Total Expected Future Assets				189,478
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$382,493
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$96,151		\$96,151
b. Disability Benefits		3,924		3,924
c. Surviving Spouse's Benefits		5,501		5,501
d. Surviving Children's Benefits		165		165
2. Deferred Retirements with Future Augmentation		970		970
3. Former Members without Vested Rights		553		553
4. Active Members				
a. Retirement Annuities	7,620	156,072		163,692
b. Disability Benefits	1,080	13,000		14,080
c. Survivors' Benefits	362	9,220		9,582
d. Deferred Retirements	0	0		0
e. Refund Liability Due to Death or Withdrawal	2,928	10,986		13,914
5. Total Current Benefit Obligations	\$11,990	\$296,542		\$308,532
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$131,835
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$440,367
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$115,517
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$57,874

TABLE 9

## ST. PAUL TEACHERS' RETIREMENT FUND

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

JULY 1, 1986

	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	\$278,192	\$70,619	\$207,573
b. Disability Benefits	21,073	\$9,269	11,804
c. Survivors Benefits	13,793	\$5,337	8,456
d. Deferred Retirements	0	\$0	0
e. Refunds Due to Death or Withdrawal	20,045	\$17,365	2,680
f. Total	<u>\$333,103</u>	<u>\$102,590</u>	<u>\$230,513</u>
2. Deferred Retirements with Future Augmentation	\$970		\$970
3. Former Members Without Vested Rights	553		553
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	105,741		105,741
6. Total AAL	<u>\$440,367</u>	<u>\$102,590</u>	<u>\$337,777</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$337,777
2. Current Assets (Table 1,F6)			193,015
3. UAAL (B1-B2)			<u>\$144,762</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2009			\$1,613,381
2. Supplemental Contribution Rate (B3/C1)			8.97%

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)**  
**(DOLLARS IN THOUSANDS)**

**TABLE 10**

**YEAR ENDING JUNE 30, 1986**

A. UAAL AT BEGINNING OF YEAR	\$147,533
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$9,844
2. Contribution	(14,302)
3. Interest on A, B1, and B2	11,624
	-----
4. Total (B1+B2+B3)	\$7,166
	-----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$154,699
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$3,374
2. Investment Return	(17,913)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	(626)
5. Other Items	5,222
	-----
6. Total	(\$9,943)
	-----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$144,756
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$6
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
	-----
H. UAAL AT END OF YEAR (E+F+G)	\$144,762
	=====



TABLE 11

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

JULY 1, 1986

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	6.96%	\$5,913
2. Employer Contributions	10.22%	8,679
3. Total	----- 17.18% =====	----- \$14,592 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	7.91%	\$6,714
b. Disability Benefits	1.05%	896
c. Survivors	0.61%	519
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	1.85%	1,567
f. Total	----- 11.42% -----	----- \$9,696 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$144,762	8.97%	\$7,621
3. Allowance for Expenses	0.38%	\$323
4. Total	----- 20.77%	----- \$17,640
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b> (A3-B4)	-3.59%	(\$3,048)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$84,932

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 12

PROJECTED CASH FLOW  
(DOLLARS IN THOUSANDS)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO MPRIF</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>
1986					\$193,015
1987	\$14,592	\$0	\$15,362	\$15,411	207,656
1988	14,901	0	16,800	16,536	222,293
1989	15,511	0	17,320	17,711	238,195
1990	16,083	0	18,202	18,971	255,047
1991	16,676	0	19,265	20,301	272,759
1992	17,221	0	20,827	21,677	290,830
1993	17,836	0	22,337	23,087	309,416
1994	18,446	0	24,041	24,529	328,350
1995	19,026	0	26,234	25,980	347,122
1996	19,661	0	28,338	27,423	365,868
1997	20,401	0	30,166	28,879	384,982
1998	21,148	0	32,222	30,355	404,263
1999	21,802	0	34,940	31,815	422,940
2000	22,507	0	37,817	33,223	440,853
2001	23,288	0	40,815	34,567	457,893
2002	24,266	0	43,173	35,875	474,861
2003	25,257	0	45,753	37,169	491,534
2004	26,351	0	48,361	38,443	507,967
2005	27,371	0	51,843	39,659	523,154
2006	28,485	0	55,399	40,776	537,016
2007	29,710	0	58,740	41,800	549,786
2008	31,063	0	61,885	42,750	561,714
2009	32,409	0	65,905	43,597	571,815
2010	33,798	0	70,334	44,283	579,562
2011	35,478	0	74,153	44,818	585,705

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 8% per annum
Salary Increases:	Total reported pay for prior fiscal year increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Male - 1983 GAM Female - 1983 GAM set forward 1 year  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - 1983 GAM set forward 10 years Female - 1983 GAM set forward 11 years
Retirement Age:	Greater of age 62 and one year from valuation date or earliest date eligible for unreduced benefit. 25% of employees are assumed to retire under the Rule of 85 when first eligible.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Administrative and Investment Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.38% of payroll)
Return of Contributions:	All employees withdrawing for reasons other than retirement, disability or death were assumed to receive a refund of their employee contributions.
Family Composition:	85% of male Members and 60% of female Members are assumed to be married. Female is four years younger than male. Assume Members have two children.
Social Security:	NA
Benefit Increases After Retirement:	NA
Special Consideration:	Annual bonus payment totaling 1% of the year end assets is accounted for by using a 7% post and pre-retirement interest rate.

TABLE 13  
(cont)

Actuarial Cost Method:	Entry Age Normal 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.
Projected Cash Flow Method:	Cash flows from the Fund were projected based on the current plan benefits, participant data, and actuarial assumptions. In addition, new entrants were assumed so that the total payroll would increase by 6.5% per annum.

TABLE 13  
(cont)SEPARATIONS EXPRESSED AS THE  
NUMBER OF OCCURRENCES PER 10,000

Age	Death		Withdrawal		Disability		Retirement	
	Male	Female	Male	Female	Male	Female	Male	Female
20	4	2	600	1,000	7	7	0	0
21	4	2	600	1,000	7	7	0	0
22	4	2	600	1,000	7	7	0	0
23	4	2	600	1,000	7	7	0	0
24	4	3	600	1,000	7	7	0	0
25	5	3	600	1,000	8	8	0	0
26	5	3	600	1,000	8	8	0	0
27	5	3	600	1,000	8	8	0	0
28	5	3	600	1,000	8	8	0	0
29	6	3	600	1,000	8	8	0	0
30	6	4	600	1,000	8	8	0	0
31	6	4	570	1,000	9	9	0	0
32	7	4	540	1,000	9	9	0	0
33	7	4	510	1,000	9	9	0	0
34	8	5	480	1,000	9	9	0	0
35	9	5	450	1,000	10	10	0	0
36	9	5	430	960	10	10	0	0
37	10	6	410	920	10	10	0	0
38	10	6	390	880	11	11	0	0
39	11	7	370	840	11	11	0	0
40	12	7	350	800	11	11	0	0
41	14	8	340	720	12	12	0	0
42	15	8	330	640	13	13	0	0
43	17	9	320	560	14	14	0	0
44	19	10	310	530	15	15	0	0
45	22	11	300	500	16	16	0	0
46	25	12	280	460	18	18	0	0
47	28	14	260	420	19	19	0	0
48	31	15	240	380	21	21	0	0
49	35	16	220	340	22	22	0	0
50	39	18	200	300	24	24	0	0
51	43	19	180	260	26	26	0	0
52	48	21	160	220	29	29	0	0
53	52	23	140	180	32	32	0	0
54	57	25	120	140	36	36	0	0

TABLE 13  
(cont)

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>
55	61	28	100	100	40	40	0	0
56	66	31	80	80	46	46	0	0
57	71	34	60	60	53	53	0	0
58	77	38	40	40	61	61	0	0
59	84	42	20	20	72	72	0	0
60	92	47	0	0	84	84	0	0
61	101	52	0	0	97	97	0	0
62	111	58	0	0	113	113	10,000	10,000
63	124	64	0	0	130	130	0	0
64	139	71	0	0	149	149	0	0
65	156	78	0	0	0	0	0	0
66	176	87	0	0	0	0	0	0
67	198	97	0	0	0	0	0	0
68	222	109	0	0	0	0	0	0
69	248	124	0	0	0	0	0	0
70	275	141	0	0	0	0	0	0

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 15

MEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

A. ACTIVE MEMBERS		
	<u>NUMBER</u>	<u>PAYROLL</u>
1. As of the Last Valuation Date	3,022	\$71,222
2. New Entrants	530	NA
3. Total	3,552	NA
4. Separations from Active Service		
a. Refund of Contributions	(60)	NA
b. Separation with Deferred Annuity	0	0
c. Separation with neither Refund nor Deferred Annuity	(272)	NA
d. Disability	0	0
e. Death	(2)	NA
f. Retirement with Service Annuity	(54)	NA
5. Total Separations	(388)	NA
6. Data Adjustments	47	NA
7. As of Current Valuation Date	3,211	\$79,749
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	963	\$9,073
2. New Entrants	66	NA
3. Total	1,029	NA
4. Terminations		
a. Deaths	(35)	(158)
b. Others	0	0
5. Total Terminations	(35)	(158)
6. Data Adjustments	(3)	NA
7. As of Current Valuation Date	991	\$9,941
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	28	\$466
2. New Entrants	0	0
3. Total	28	466
4. Terminations		
a. Deaths	0	0
b. Others	(1)	NA
5. Total Terminations	(1)	NA
6. Data Adjustments	7	NA
7. As of Current Valuation Date	34	\$485

TABLE 15

(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	98	\$550
2. New Entrants	7	80
3. Total	105	630
4. Terminations		
a. Deaths	(4)	(14)
b. Others	0	0
5. Total Terminations	(4)	(14)
6. Data Adjustments	0	0
7. As of Current Valuation Date	101	\$616
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	14	\$66
2. New Entrants	0	0
3. Total	14	66
4. Terminations		
a. Deaths	0	0
b. Others	(3)	(14)
5. Total Terminations	(3)	(14)
6. Data Adjustments	0	0
7. As of Current Valuation Date	11	\$52
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	36	\$234
2. New Entrants	1	7
3. Total	37	241
4. Terminations		
a. Deaths	(1)	NA
b. Others	(11)	NA
5. Total Terminations	(12)	NA
6. Data Adjustments	5	NA
7. As of Current Valuation Date	30	\$157



## ST. PAUL TEACHERS' RETIREMENT FUND

BASIC

REPORT HIGHLIGHTS  
(DOLLARS IN THOUSANDS)

	<u>07/01/85</u> <u>VALUATION</u>	<u>07/01/86</u> <u>VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11A)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	20.63%	20.63%
2. Required Contributions - Chapter 356 % of Payroll	26.39%	25.95%
3. Sufficiency (Deficiency) (A1-A2)	-5.76%	-5.32%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$151,838	\$181,307
b. Current Benefit Obligations (Table 8A)	\$273,824	\$297,178
c. Funding Ratio (a/b)	55.45%	61.01%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$151,838	\$181,307
b. Actuarial Accrued Liability (Table 9A)	\$296,043	\$323,138
c. Funding Ratio (a/b)	51.29%	56.11%
3. Projected Benefit Funding Ratio (Table 8A)		
a. Current and Expected Future Assets	\$309,754	\$341,317
b. Current and Expected Future Benefit Obligations	\$374,276	\$401,668
c. Funding Ratio (a/b)	82.76%	84.97%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3A)	1,647	1,595
b. Projected Annual Earnings	\$56,811	\$59,740
c. Average Annual Earnings (Actual \$)	\$34,494	\$37,454
d. Average Age	46.8	47.4
e. Average Service	17.8	18.5
f. Additional Members on Leave of Absence	88	72
2. Others		
a. Service Retirements (Table 4A)	953	979
b. Disability Retirements (Table 5A)	28	34
c. Survivors (Table 6A)	112	112
d. Deferred Retirements (Table 7A)	35	29
e. Terminated Other Non-vested (Table 7A)	151	139
f. Total	1,279	1,293

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 3A  
BASIC

## ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									0
25-29									0
30-34			34	15					49
35-39		2	54	124	127				307
40-44		3	24	76	182	49			334
45-49			12	44	115	98	38		307
50-54		1	15	34	76	56	80	26	288
55-59		1	7	12	38	40	44	62	204
60-64			3	7	19	19	17	25	90
65+			1		2	5	3	5	16
TOTAL	0	7	150	312	559	267	182	118	1,595

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									0
25-29									0
30-34			21,347	27,128					23,117
35-39		24,577	24,111	29,730	34,674				30,753
40-44		29,431	30,773	34,856	35,941	36,859			35,399
45-49			33,701	34,053	36,685	39,084	38,457		37,176
50-54		32,470	27,577	35,033	35,980	38,187	37,849	39,481	36,683
55-59		26,089	28,297	36,018	35,311	37,961	38,407	41,875	38,249
60-64			28,963	31,198	33,901	37,889	37,773	41,015	37,075
65+			30,631		38,031	33,904	33,378	40,162	36,072
ALL	0	28,001	26,000	32,316	35,707	38,137	38,030	41,093	35,167

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

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
0	196	3,900	10,083	19,959	10,183	6,922	4,849	56,092

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 4A  
BASIC

## SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	29	38	1					68
60-64	19	124	30					173
65-69	9	75	74	4				162
70-74	1	10	100	55	2			168
75-79			4	101	21	4		130
80-84				35	74	22	13	144
85+					23	37	74	134
TOTAL	58	247	209	195	120	63	87	979

## AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	17,689	13,240	17,019					15,193
60-64	18,361	16,132	10,381					15,379
65-69	15,616	13,852	13,484	8,307				13,645
70-74	7,739	16,473	9,748	9,013	5,251			9,842
75-79			8,267	8,003	5,106	3,212		7,396
80-84				8,714	5,419	4,292	2,774	5,809
85+					5,064	4,309	3,505	3,995
ALL	17,416	15,008	11,168	8,422	5,293	4,233	3,396	10,103

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
1,010	3,708	2,334	1,642	635	267	295	9,891

ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 5A  
BASIC

DISABILITY RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS DISABLED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		1	1					2
50-54		2	1					3
55-59		4	2	2				8
60-64		3	1					4
65-69		3	4	2				9
70-74			1	2	1			4
75-79					1			1
80-84					1		2	3
85+								0
TOTAL	0	13	10	6	3	0	2	34

AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		16,405	9,709					13,057
50-54		23,007	14,929					20,314
55-59		22,284	8,588	12,408				16,391
60-64		24,578	17,030					22,691
65-69		12,792	16,732	12,332				14,441
70-74			12,951	7,389	6,228			8,489
75-79					4,400			4,400
80-84					3,482		2,252	2,662
85+								0
TOTAL	0	20,282	13,872	10,710	4,703	0	2,252	14,272

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS OF DISABILITY

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
0	263	139	64	14	0	5	485

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 6A  
BASIC

SURVIVORS AS OF JUNE 30, 1986

AGE	YEARS SINCE DEATH							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		5	9		1			15
50-54		2						2
55-59	2	2	2					6
60-64		6	5	2				13
65-69	2	9	5	4				20
70-74		5	5	1				11
75-79	3	9	5	2	3	1		23
80-84		7	2	2			2	13
85+		3	1	4	1			9
TOTAL	7	48	34	15	5	1	2	112

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50		6,829	4,707		3,350			5,324
50-54		6,275						6,275
55-59	21,630	8,841	6,882					12,451
60-64		8,559	6,678	3,210				7,012
65-69	8,486	5,422	7,086	4,982				6,056
70-74		8,841	7,567	3,547				7,781
75-79	2,996	5,308	6,909	3,248	2,080	1,371		4,583
80-84		4,718	7,864	3,406			2,064	4,592
85+		6,873	1,102	2,840	4,734			4,202
ALL	9,888	6,462	6,299	3,638	2,865	1,371	2,064	5,964

TOTAL ANNUAL BENEFIT (IN THOUSANDS) BY YEARS SINCE DEATH							
<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
69	311	214	55	14	1	4	668

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 7A  
BASIC

## RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	1,735	35	151
B. Additions	0	0	0
C. Deletions:			
1. Service Retirement	(52)	(11)	
2. Disability	0		
3. Death	(2)	(1)	
4. Terminated-Deferred	0		
5. Terminated-Refund	(8)	0	(9)
6. Terminated-Other Non-vested	0		
7. Returned as Active		0	0
D. Data Adjustments	(6)	6	(3)
	Vested	1,491	
	Non-Vested	176	
E. Total on June 30, 1986	1,667	29	139

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	953	28	112
B. Additions	64	0	7
C. Deletions:			
1. Service Retirement		(1)	
2. Death	(35)	0	(4)
3. Annuity Expired	0	0	(3)
4. Returned as Active	0	0	
D. Data Adjustments	(3)	7	0
E. Total on June 30, 1986	979	34	112

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 8A  
BASICACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 2, K3)				\$181,307
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				81,480
2. Present Value of Future Normal Costs				78,530
3. Total Expected Future Assets				----- 160,010 -----
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$341,317 =====
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>		<u>Total</u>
1. Benefit Recipients				
a. Retirement Annuities		\$95,653		\$95,653
b. Disability Benefits		3,924		3,924
c. Surviving Spouse's Benefits		5,501		5,501
d. Surviving Children's Benefits		165		165
2. Deferred Retirements with Future Augmentation		939		939
3. Former Members without Vested Rights		236		236
4. Active Members				
a. Retirement Annuities	3,265	152,842		156,107
b. Disability Benefits	704	12,762		13,466
c. Survivors' Benefits	275	9,152		9,427
d. Deferred Retirements	0	0		0
e. Refund Liability Due to Death or Withdrawal	1,177	10,583		11,760
5. Total Current Benefit Obligations	----- \$5,421 -----	----- \$291,757 -----		----- \$297,178 -----
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$104,490 -----
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$401,668 =====
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$115,871
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$60,351

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 9A  
BASICDETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY  
AND SUPPLEMENTAL CONTRIBUTION RATE  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	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	\$247,628	\$51,922	\$195,706
b. Disability Benefits	19,129	\$8,043	11,086
c. Survivors Benefits	13,207	\$4,965	8,242
d. Deferred Retirements	0	\$0	0
e. Refunds Due to Death or Withdrawal	15,286	\$13,600	1,686
f. Total	<u>\$295,250</u>	<u>\$78,530</u>	<u>\$216,720</u>
2. Deferred Retirements with Future Augmentation	\$939		\$939
3. Former Members Without Vested Rights	236		236
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	105,243		105,243
6. Total AAL	<u>\$401,668</u>	<u>\$78,530</u>	<u>\$323,138</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$323,138
2. Current Assets (Table 2, K3)			181,307
3. UAAL (B1-B2)			<u>\$141,831</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$1,134,824
2. Supplemental Contribution Rate (B3/C1)			12.50%



**ST. PAUL TEACHERS' RETIREMENT FUND**  
**CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)**  
**(DOLLARS IN THOUSANDS)**

**TABLE 10A**  
**BASIC**

**YEAR ENDING JUNE 30, 1986**

A. UAAL AT BEGINNING OF YEAR	\$144,205
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$7,963
2. Contribution	(12,142)
3. Interest on A, B1, and B2	11,369
4. Total (B1+B2+B3)	----- \$7,190 -----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$151,395
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$3,207
2. Investment Return	(16,911)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	(630)
5. Other Items	4,770
6. Total	----- (\$9,564) -----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$141,831
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)	----- \$141,831 =====

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

**TABLE 11A**  
**BASIC**

**JULY 1, 1986**

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	8.00%	\$4,779
2. Employer Contributions	12.63%	7,545
3. Total	----- 20.63% =====	----- \$12,324 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	8.78%	\$5,250
b. Disability Benefits	1.34%	801
c. Survivors	0.83%	494
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	2.12%	1,264
f. Total	----- 13.07% -----	----- \$7,809 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$141,831	12.50%	\$7,467
3. Allowance for Expenses	0.38%	\$227
4. Total	----- 25.95%	----- \$15,503
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b> (A3-B4)	-5.32%	(\$3,179)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$59,740

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 12A  
BASICPROJECTED CASH FLOW  
JULY 1, 1986

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO MPRIF</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>
1986					\$181,307
1987	\$12,324	\$0	\$14,895	\$14,402	193,138
1988	11,992	0	16,260	15,280	204,150
1989	12,135	0	16,677	16,150	215,758
1990	12,150	0	17,428	17,050	227,530
1991	12,138	0	18,332	17,955	239,291
1992	11,970	0	19,733	18,833	250,361
1993	11,853	0	21,056	19,661	260,819
1994	11,650	0	22,533	20,430	270,366
1995	11,309	0	24,426	21,105	278,354
1996	10,977	0	26,208	21,659	284,782
1997	10,736	0	27,617	22,107	290,008
1998	10,407	0	29,338	22,443	293,520
1999	9,805	0	31,663	22,607	294,269
2000	9,179	0	33,990	22,549	292,007
2001	8,565	0	36,256	22,253	286,569
2002	8,172	0	37,787	21,741	278,695
2003	7,663	0	39,599	21,018	267,777
2004	7,191	0	41,228	20,061	253,801
2005	6,429	0	43,612	18,817	235,435
2006	5,667	0	45,839	17,228	212,491
2007	4,924	0	47,840	15,283	184,858
2008	4,218	0	49,520	12,977	152,533
2009	3,298	0	51,719	10,266	114,378
2010	2,240	0	54,114	7,075	69,579
2011	1,469	0	55,361	3,411	19,098

**ST. PAUL TEACHERS' RETIREMENT FUND****TABLE 14A  
BASIC****SUMMARY OF PLAN PROVISIONS**

Eligibility	A teacher who is employed in a public school district located in the corporate limits of the City of St. Paul and who is not covered by the Social Security Act. Also includes employees of the St. Paul Teachers Retirement Fund.
Contributions	
Member	8.0% of Salary.
Employer	12.63% of Salary.
Allowable Service	All periods of service for which salary deductions were made and service during sabbatical leave. After June 30, 1974, St. Paul service for part-time teachers is granted on a proportional basis of actual duty days to the agreed number of annual duty days. Years of service credited prior to May 31, 1976 shall not be recomputed.
Salary	Total compensation. Excludes lump sum payments for unused vacation leave or unused sick leave at separation.
Average Salary	Average of the 5 highest years of Salary during the last 10 years while making contributions or while disabled.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 65 and 10 years of Allowable Service. Age 60 and 25 years of Allowable Service. Rule of 85: Age 55 and age plus Allowable Service totals 85 prior to 1/1/87, and retirement prior to 7/1/87.
Amount	2% of Average Salary for each year of Allowable Service not to exceed 40 years.
Early Retirement Benefit	
Eligibility	Age 55 and 10 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date. If the Member has at least 25 years of service, the benefit is reduced 0.5% for each month the Member is under age 60. Otherwise the reduction is 0.5% for each of the first 60 months the Member is under age 65 and 0.25% for each month the Member is under age 60.

**TABLE 14A**  
**BASIC**  
**(cont)**

Form of Payment	Life annuity.
Benefit Increases	If the investment income of the fund was as least 6% of the asset value of the fund at the end of the fiscal year, the Board of Trustees may declare a bonus of up to 1% of the asset value of the fund at the end of the fiscal year. This bonus is allocated to those eligible on a prorated basis according to the combined number of years of service and years receiving a benefit. A retired Member is eligible if receiving an annuity for at least 3 years.
<b>DISABILITY</b>	
Disability Benefit Eligibility	Totally and permanently disabled before the age of 65 with 5 years of St. Paul service.
Amount	An annuity of 75% of the annual contract salary for the last full year of service reduced by any Social Security and Workers' Compensation benefits.  Payments are recomputed as a retirement at age 65. Payments stop if disability ceases or death occurs.
Form of Payment	Life annuity.
Benefit Increases	Same as for retirement.
<b>Retirement After Disability</b>	
Eligibility	Age 65 with continued disability.
Amount	Normal Retirement Benefit based on Average Salary and Allowable Service as if Member had continued in his latest position during the period of his disability.
Form of Payment	Same as for retirement.
Benefit Increases	Same as for retirement.
<b>DEATH</b>	
Family Benefits Eligibility	Active Member with 3 years of St. Paul service.

**TABLE 14A**  
**BASIC**  
**(cont)**

Amount	Benefit of 15% of B.A. salary to spouse plus 25% of B.A. salary to each eligible child (maximum of 2). B.A. salary is the maximum salary payable to a teacher holding a B.A. degree.
Survivor's Benefits Eligibility	Spouse's benefits cease upon remarriage, death, or when the spouse elects survivor's benefits. Such election does not affect benefits paid to children but total benefits may not exceed 90% of the Member's final salary. Children's benefits cease upon marriage or age 18 (22 if full time student).
Amount	Active or retired Member with 10 years of St Paul service. A surviving spouse must have been married to the Member for 3 years at the time of his death or retirement, whichever occurs first.
Benefit Increases	Survivor's payment of the 100% joint and survivor benefit earned by the Member to the date of his death or his retirement, whichever occurs first.
Refund of Contributions Eligibility	Same as for a retired person if payments have been made over three years. The allocation is based on the years of service of the person on whose behalf the annuity is paid and the years receiving payment.
Amount	Death of a Member or former Member when Family Benefits and Survivor's Benefits are not payable.
Amount	The excess of the Member's contributions with 5% interest (unless the Member was disabled) over total benefits paid.
<b>TERMINATION</b>	
Refund of Contributions Eligibility	Termination of teaching service.
Amount	Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.
Deferred Annuity Eligibility	10 years of Allowable Service.
Amount	Benefit computed under law in effect at termination and increased by the following annual percentage: 5% before 1/1/81 and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 15A  
BASICMEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

A. ACTIVE MEMBERS		
	<u>NUMBER</u>	<u>PAYROLL</u>
1. As of the Last Valuation Date	1,735	\$53,344
2. New Entrants	0	0
3. Total	1,735	53,344
4. Separations from Active Service		
a. Refund of Contributions	(8)	NA
b. Separation with Deferred Annuity	0	0
c. Separation with neither Refund nor Deferred Annuity	0	0
d. Disability	0	0
e. Death	(2)	NA
f. Retirement with Service Annuity	(52)	NA
5. Total Separations	(62)	NA
6. Data Adjustments	(6)	NA
7. As of Current Valuation Date	1,667	\$56,092
B. SERVICE RETIREMENT ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	953	\$9,029
2. New Entrants	64	NA
3. Total	1,017	NA
4. Terminations		
a. Deaths	(35)	(158)
b. Others	0	0
5. Total Terminations	(35)	(158)
6. Data Adjustments	(3)	NA
7. As of Current Valuation Date	979	\$9,891
C. DISABLED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	28	\$466
2. New Entrants	0	0
3. Total	28	466
4. Terminations		
a. Deaths	0	0
b. Others	(1)	NA
5. Total Terminations	(1)	NA
6. Data Adjustments	7	NA
7. As of Current Valuation Date	34	\$485

TABLE 15A  
BASIC  
(cont)

D. SURVIVING SPOUSE ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	98	\$550
2. New Entrants	7	80
3. Total	105	630
4. Terminations		
a. Deaths	(4)	(14)
b. Others	0	0
5. Total Terminations	(4)	(14)
6. Data Adjustments	0	0
7. As of Current Valuation Date	101	\$616
E. SURVIVING CHILDREN ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	14	\$66
2. New Entrants	0	0
3. Total	14	66
4. Terminations		
a. Deaths	0	0
b. Others	(3)	(14)
5. Total Terminations	(3)	(14)
6. Data Adjustments	0	0
7. As of Current Valuation Date	11	\$52
F. DEFERRED ANNUITANTS		
	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	35	\$228
2. New Entrants	0	0
3. Total	35	228
4. Terminations		
a. Deaths	(1)	NA
b. Others	(11)	NA
5. Total Terminations	(12)	NA
6. Data Adjustments	6	NA
7. As of Current Valuation Date	29	\$150



## ST. PAUL TEACHERS' RETIREMENT FUND

COORDINATED

REPORT HIGHLIGHTS - COORDINATED  
(DOLLARS IN THOUSANDS)

	<u>07/01/85</u> <u>VALUATION</u>	<u>07/01/86</u> <u>VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11B)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	9.00%	9.00%
2. Required Contributions - Chapter 356 % of Payroll	8.72%	8.48%
3. Sufficiency (Deficiency) (A1-A2)	0.28%	0.52%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	\$8,036	\$11,708
b. Current Benefit Obligations (Table 8B)	\$8,764	\$11,354
c. Funding Ratio (a/b)	91.69%	103.12%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$8,036	\$11,708
b. Actuarial Accrued Liability (Table 9B)	\$11,364	\$14,639
c. Funding Ratio (a/b)	70.71%	79.98%
3. Projected Benefit Funding Ratio (Table 8B)		
a. Current and Expected Future Assets	\$30,589	\$41,176
b. Current and Expected Future Benefit Obligations	\$29,560	\$38,699
c. Funding Ratio (a/b)	103.48%	106.40%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members		
a. Number (Table 3B)	1,241	1,510
b. Projected Annual Earnings	\$19,041	\$25,192
c. Average Annual Earnings (Actual \$)	\$15,343	\$16,684
d. Average Age	37.8	37.8
e. Average Service	3.3	3.3
f. Additional Members on Leave of Absence	46	34
2. Others		
a. Service Retirements (Table 4B)	10	12
b. Disability Retirements (Table 5B)	0	0
c. Survivors (Table 6B)	0	0
d. Deferred Retirements (Table 7B)	1	1
e. Terminated Other Non-vested (Table 7B)	1,619	1,713
f. Total	1,630	1,726

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 3B  
COORDINATED

## ACTIVE MEMBERS AS OF JUNE 30, 1986

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	73	26							99
25-29	126	106	26						258
30-34	106	116	100	3					325
35-39	71	95	93	8	9				276
40-44	64	76	55	7	11	2			215
45-49	40	45	42	5	3	2	1		138
50-54	27	34	29	4	4	2	1		101
55-59	16	17	16	6	2				57
60-64	11	7	8	1	3				30
65+	7	2	2						11
TOTAL	541	524	371	34	32	6	2	0	1,510

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	4,797	18,857							8,490
25-29	4,347	19,362	21,359						12,230
30-34	3,706	18,269	22,054	25,948					14,754
35-39	4,464	19,089	26,045	24,447	32,973				18,279
40-44	4,124	19,165	29,228	32,130	39,829	33,441			18,874
45-49	3,383	19,262	29,325	30,568	35,337	33,255	34,753		18,796
50-54	2,453	17,742	26,369	30,890	35,207	32,821	34,267		17,806
55-59	3,127	15,566	25,465	20,288	34,643				16,019
60-64	1,611	9,720	20,561	35,033	43,086				13,818
65+	1,866	9,725	5,124						3,887
ALL	3,982	18,614	25,253	27,397	36,883	33,172	34,510	0	15,667

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

<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL
2,154	9,755	9,369	931	1,180	199	69	0	23,657

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 4B  
COORDINATED

## SERVICE RETIREMENTS AS OF JUNE 30, 1986

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	1							1
60-64	1	2						3
65-69		3						3
70-74		1	4					5
75-79								0
80-84								0
85+								0
TOTAL	2	6	4	0	0	0	0	12

## AVERAGE ANNUAL ANNUITY

AGE	YEARS RETIRED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	4,727							4,727
60-64	1,323	6,179						4,560
65-69		5,780						5,780
70-74		10,980	947					2,953
75-79								0
80-84								0
85+								0
ALL	3,025	6,780	947	0	0	0	0	4,209

## TOTAL ANNUAL ANNUITY (IN THOUSANDS) BY YEARS OF RETIREMENT

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
6	41	4	0	0	0	0	51

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 7B  
COORDINATED

## RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1985	1,287	1	1,619
B. Additions	530	1	272
C. Deletions:			
1. Service Retirement	(2)	0	
2. Disability	0		
3. Death	0	0	
4. Terminated-Deferred	0		
5. Terminated-Refund	(52)	0	(85)
6. Terminated-Other Non-vested	(272)		
7. Returned as Active		0	0
D. Data Adjustments	53	(1)	(93)
	Vested 74		
	Non-Vested 1,470		
E. Total on June 30, 1986	1,544	1	1,713

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1985	10	0	0
B. Additions	2	0	0
C. Deletions:			
1. Service Retirement		0	
2. Death	0	0	0
3. Annuity Expired	0	0	0
4. Returned as Active	0	0	
D. Data Adjustments	0	0	0
E. Total on June 30, 1986	12	0	0

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 8B  
COORDINATEDACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

A. CURRENT ASSETS (TABLE 2, K3)				\$11,708
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				5,408
2. Present Value of Future Normal Costs				24,060
3. Total Expected Future Assets				29,468
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$41,176
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>		<u>Total</u>
1. Benefit Recipients				
a. Retirement Annuities		\$498		\$498
b. Disability Benefits		0		0
c. Surviving Spouse's Benefits		0		0
d. Surviving Children's Benefits		0		0
2. Deferred Retirements with Future Augmentation		31		31
3. Former Members without Vested Rights		317		317
4. Active Members				
a. Retirement Annuities	4,355	3,230		7,585
b. Disability Benefits	376	238		614
c. Survivors' Benefits	87	68		155
d. Deferred Retirements	0	0		0
e. Refund Liability Due to Death or Withdrawal	1,751	403		2,154
5. Total Current Benefit Obligations	\$6,569	\$4,785		\$11,354
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$27,345
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$38,699
G. CURRENT UNFUNDED LIABILITY (D5-A)				(\$354)
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$2,477)

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 9B  
COORDINATEDDETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY  
AND SUPPLEMENTAL CONTRIBUTION RATE  
(DOLLARS IN THOUSANDS)

JULY 1, 1986

	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	\$30,564	\$18,697	\$11,867
b. Disability Benefits	1,944	\$1,226	718
c. Survivors Benefits	586	\$372	214
d. Deferred Retirements	0	\$0	0
e. Refunds Due to Death or Withdrawal	4,759	\$3,765	994
f. Total	\$37,853	\$24,060	\$13,793
2. Deferred Retirements with Future Augmentation	\$31		\$31
3. Former Members Without Vested Rights	317		317
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	498		498
6. Total AAL	\$38,699	\$24,060	\$14,639
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$14,639
1. Current Assets (Table 2, K3)			11,708
3. UAAL (B1-B2)			\$2,931
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$478,557
2. Supplemental Contribution Rate (B3/C1)			0.61%

ST. PAUL TEACHERS' RETIREMENT FUND

CHANGES IN UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)  
(DOLLARS IN THOUSANDS)

TABLE 10B  
COORDINATED

YEAR ENDING JUNE 30, 1986

A. UAAL AT BEGINNING OF YEAR	\$3,328
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$1,881
2. Contribution	(2,160)
3. Interest on A, B1, and B2	255
4. Total (B1+B2+B3)	----- (\$24) -----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$3,304
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$167
2. Investment Return	(1,002)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	4
5. Other Items	452
6. Total	----- (\$379) -----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D6)	\$2,925
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$6
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	\$0
H. UAAL AT END OF PERIOD (E+F+G)	----- \$2,931 =====

**ST. PAUL TEACHERS' RETIREMENT FUND**  
**DETERMINATION OF CONTRIBUTION SUFFICIENCY**  
**(DOLLARS IN THOUSANDS)**

**TABLE 11B**  
**COORDINATED**

**JULY 1, 1986**

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	4.50%	\$1,134
2. Employer Contributions	4.50%	1,134
3. Total	----- 9.00% =====	----- \$2,268 =====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	5.81%	\$1,464
b. Disability Benefits	0.38%	95
c. Survivors	0.10%	25
d. Deferred Retirement Benefits	0.00%	0
e. Refunds Due to Death or Withdrawal	1.20%	303
f. Total	----- 7.49% -----	----- \$1,887 -----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$2,931	0.61%	\$154
3. Allowance for Expenses	0.38%	\$96
4. Total	----- 8.48%	----- \$2,137
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)     (A3-B4)</b>	0.52%	\$131

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1986 is \$25,192



## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 12B  
COORDINATEDPROJECTED CASH FLOW  
(DOLLARS IN THOUSANDS)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO MPRIF</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>
1986					\$11,708
1987	\$2,268	\$0	\$467	\$1,009	14,518
1988	2,909	0	540	1,256	18,143
1989	3,376	0	643	1,561	22,437
1990	3,933	0	774	1,921	27,517
1991	4,538	0	933	2,346	33,468
1992	5,251	0	1,094	2,844	40,469
1993	5,983	0	1,281	3,426	48,597
1994	6,796	0	1,508	4,099	57,984
1995	7,717	0	1,808	4,875	68,768
1996	8,684	0	2,130	5,764	81,086
1997	9,665	0	2,549	6,772	94,974
1998	10,741	0	2,884	7,912	110,743
1999	11,997	0	3,277	9,208	128,671
2000	13,328	0	3,827	10,674	148,846
2001	14,723	0	4,559	12,314	171,324
2002	16,094	0	5,386	14,134	196,166
2003	17,594	0	6,154	16,151	223,757
2004	19,160	0	7,133	18,382	254,166
2005	20,942	0	8,231	20,842	287,719
2006	22,818	0	9,560	23,548	324,525
2007	24,786	0	10,900	26,517	364,928
2008	26,845	0	12,365	29,773	409,181
2009	29,111	0	14,186	33,331	457,437
2010	31,558	0	16,220	37,208	509,983
2011	34,009	0	18,792	41,407	566,607

**ST. PAUL TEACHERS' RETIREMENT FUND****TABLE 14B  
COORDINATED****SUMMARY OF PLAN PROVISIONS**

Eligibility	A teacher who is employed by a public school district located in the corporate limits of the City of St. Paul and who is covered by the Social Security Act. Also includes employees of the St. Paul Teachers Retirement Fund.
Contributions	
Member	4.5% of Salary.
Employer	4.5% of Salary.
Allowable Service	All periods of service for which salary deductions were made and service during sabbatical leave. After June 30, 1974, St. Paul service for part-time teachers is granted on a proportional basis of actual duty days to the agreed number of annual duty days. Years of service credited prior to May 31, 1976 shall not be recomputed.
Salary	Total Compensation. Excludes lump sum payments for unused vacation leave or unused sick leave at separation.
Average Salary	Average of the 5 highest successive years of Salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 65 and 10 years of Allowable Service. Age 62 and 30 years of Allowable Service. Rule of 85: Age 55 and age plus Allowable Service totals 85 and retirement prior to 1/1/87, and retirement prior to 7/1/87.
Amount	1% of Average Salary for the first 10 years of Allowable Service and 1.5% of Average Salary for each subsequent year.
Early Retirement Benefit	
Eligibility	Age 55 and 10 years of Allowable Service. Any age with 30 years of Allowable Service.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at retirement date with reduction for benefits commencing prior to the normal retirement age 65 (age 62 if 30 years of Allowable Service). The monthly reduction factor is 0.50% from normal retirement to age 60 and 0.25% from age 60 to the date benefits begin.

**TABLE 14B  
COORDINATED  
(cont)**

Form of Payment	Life annuity. Actuarially equivalent options are: Guaranteed refund 15 year certain and life 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary).
Benefit Increases	If the investment income of the fund was as least 6% of the asset value of the fund at the end of the fiscal year, the Board of Trustees may declare a bonus of up to 1% of the asset value of the fund at the end of the fiscal year. This bonus is allocated to those eligible on a prorated basis according to the combined number of years of service and years receiving a benefit. A retired member is eligible if receiving an annuity for at least 3 years.
<b>DISABILITY</b>	
Disability Benefit Eligibility	Total and permanent disability before age 65 with 5 years of Allowable Service if age 50 or older, or with 10 years of Allowable Service if younger than age 50. Also the last 5 years must have been uninterrupted.
Amount	Normal Retirement Benefit based on Allowable Service and Average Salary at disability without reduction for commencement before age 65. Benefit is reduced by Workers' Compensation.  Payments are recomputed as a retirement at age 65. Payments stop if disability ceases or death occurs. Benefits may be reduced on resumption of partial employment.
Form of Payment	Same as for retirement.
Benefit Increases	None.
<b>Retirement After Disability</b>	
Eligibility	Age 65 with continued disability.
Amount	Any optional annuity continues. Otherwise the larger of the disability benefit paid before age 65 or the normal retirement benefit available at age 65, or an actuarially equivalent optional annuity.
Benefit Increases	Same as for retirement.

**TABLE 14B**  
**COORDINATED**  
**(cont)**

**DEATH**

**Surviving Spouse Annuity  
Eligibility**

Member or former Member who dies before retirement or disability benefits commence, if age 50 with 10 years of Allowable Service or any age with 30 years of Allowable Service. If the Member dies before age 55, benefits commence when Member would have been age 55. (Amended 1986)

**Amount**

Survivor's payment of the 100% joint and survivor benefit the member could have elected if terminated.

**Benefit Increases**

Same as for a retired person if payments have been made over three years. The allocation is based on the years of service of the person on whose behalf the annuity is paid and the years receiving payment.

**Refund of Contributions  
Eligibility**

Member or former Member dies before receiving any disability or retirement benefits and survivor benefits are not payable.

**Amount**

Member's contributions with 5% interest.

**TERMINATION**

**Refund of Contributions  
Eligibility**

Termination of teaching service.

**Amount**

Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund.

**Deferred Annuity  
Eligibility**

10 years of Allowable Service.

**Amount**

Benefit computed under law in effect at termination and increased by the following annual percentages: 5% before 1/1/81 and 3% thereafter until the annuity begins. Amount is payable as a normal or early retirement.

## ST. PAUL TEACHERS' RETIREMENT FUND

TABLE 15B  
COORDINATEDMEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)

JUNE 30, 1986

A. ACTIVE MEMBERS		<u>NUMBER</u>	<u>PAYROLL</u>
1. As of the Last Valuation Date		1,287	\$17,879
2. New Entrants		530	NA
3. Total		1,817	NA
4. Separations from Active Service			
a. Refund of Contributions	(52)		NA
b. Separation with Deferred Annuity	0		0
c. Separation with neither Refund nor Deferred Annuity	(272)		NA
d. Disability	0		0
e. Death	0		0
f. Retirement with Service Annuity	(2)		NA
5. Total Separations	(326)		NA
6. Data Adjustments	53		NA
7. As of Current Valuation Date		1,544	\$23,657
B. SERVICE RETIREMENT ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		10	\$44
2. New Entrants		2	7
3. Total		12	51
4. Terminations			
a. Deaths	0		0
b. Others	0		0
5. Total Terminations	0		0
6. Data Adjustments	0		0
7. As of Current Valuation Date		12	\$51
C. DISABLED ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		0	\$0
2. New Entrants		0	0
3. Total		0	0
4. Terminations			
a. Deaths	0		0
b. Others	0		0
5. Total Terminations	0		0
6. Data Adjustments	0		0
7. As of Current Valuation Date		0	\$0

**TABLE 15B**  
**COORDINATED**  
**(cont)**

<b>D. SURVIVING SPOUSE ANNUITANTS</b>	<b><u>NUMBER</u></b>	<b><u>ANNUAL ANNUITY</u></b>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
<b>E. SURVIVING CHILDREN ANNUITANTS</b>	<b><u>NUMBER</u></b>	<b><u>ANNUAL ANNUITY</u></b>
1. As of the Last Valuation Date	0	\$0
2. New Entrants	0	0
3. Total	0	0
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	0	0
7. As of Current Valuation Date	0	\$0
<b>F. DEFERRED ANNUITANTS</b>	<b><u>NUMBER</u></b>	<b><u>ANNUAL ANNUITY</u></b>
1. As of the Last Valuation Date	1	\$7
2. New Entrants	1	7
3. Total	2	14
4. Terminations		
a. Deaths	0	0
b. Others	0	0
5. Total Terminations	0	0
6. Data Adjustments	(1)	(7)
7. As of Current Valuation Date	1	\$7