

**DULUTH TEACHERS' RETIREMENT FUND**

**ACTUARIAL VALUATION REPORT**

**JULY 1, 1985**

THE *Wyatt* COMPANY

ACTUARIES AND CONSULTANTS

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

NORTHWESTERN FINANCIAL CENTER  
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MINNEAPOLIS, MINNESOTA 55431  
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OFFICES IN PRINCIPAL CITIES  
AROUND THE WORLD

December 16, 1985

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

RE: DULUTH TEACHERS' RETIREMENT FUND

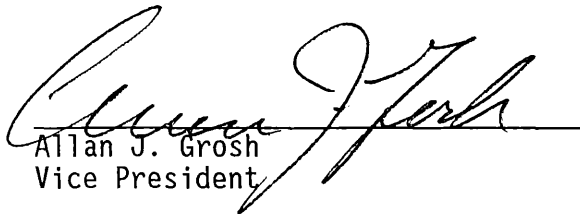
Gentlemen:

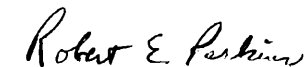
We have prepared an actuarial valuation of the Fund as of July 1, 1985 based on membership and financial data supplied by the Fund.

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 11, 1985.

Respectfully submitted,

THE WYATT COMPANY

  
Allan J. Grosh  
Vice President

  
Robert E. Perkins  
Consulting Actuary

## DULUTH TEACHERS' RETIREMENT FUND

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# DULUTH TEACHERS' RETIREMENT FUND

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>06/30/84</u> <u>VALUATION</u>	<u>07/01/85</u> <u>VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	10.29%	10.29%
2. Required Contributions - Chapter 356 % of Payroll	13.26%	11.55%
3. Sufficiency (Deficiency) (A1-A2)	-2.97%	-1.26%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 1)	NA	\$53,839
b. Current Benefit Obligations (Table 8)	NA	\$64,730
c. Funding Ratio (a/b)	NA	83.17%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 1)	\$47,859	\$53,839
b. Actuarial Accrued Liability (Table 9)	\$73,174	\$71,154
c. Funding Ratio (a/b)	65.40%	75.67%
3. Projected Benefit Funding Ratio (Table 8)		
a. Current and Expected Future Assets	\$81,126	\$95,064
b. Current and Expected Future Benefit Obligations	\$98,949	\$102,842
c. Funding Ratio (a/b)	81.99%	92.44%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members (Table 3)		
a. Number	1,137	1,182
b. Projected Annual Earnings	\$28,519	\$31,222
c. Average Annual Earnings (Actual \$)	\$25,083	\$26,415
d. Average Age	43.8	43.5
e. Average Service	12.9	12.0
2. Others		
a. Service Retirements (Table 4)	531	562
b. Disability Retirements (Table 5)	8	8
c. Survivors (Table 6)	23	23
d. Deferred Retirements (Table 7)	47	50
e. Terminated Other Non-vested (Table 7)	0	0
f. Total	609	643

## DULUTH 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 Duluth Teachers' Retirement Fund are not sufficient for 1985 by an amount of 1.26% of payroll. According to this valuation a contribution rate of 11.55% 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 recently published Governmental Accounting Standards Board proposals. This year's ratio is 83.17%. The corresponding ratio for the prior year was not calculated.
- 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 1985 the ratio is 75.67%, which is an increase from the 1984 value of 65.40%.

- 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.

The intent of the Legislature was to change assumptions in 1984. However, due to a technical error the statute stated that the post-retirement interest rate was 5% rather than the intended 8%. Since the 1984 actuarial report used 5%, the change to an 8% post-retirement assumption was made in 1985 and its effect, along with the effect of the benefit change is shown below.

	July 1, 1985 valuation		
	5% Old	8% Old	8% New
Required Contributions	13.22%	8.44%	11.55%
Accrued Benefit Funding Ratio	75.24%	96.31%	83.17%
Accrued Liability Funding Ratio	67.35%	86.29%	75.67%
Projected Benefit Funding Ratio	83.53%	115.72%	92.44%

#### 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 except in the case of fulltime new hires where earnings have been annualized.

The service retirements are shown in Table 4 and disabled members are shown in Table 5. The annuities that are shown in Table 4 do not include the temporary higher benefit that is payable prior to the commencement of Social Security



the level income option. The survivors category (Table 6) covers spouses and children of deceased members.

Valuation of active members is shown in Tables 7 and 15. The data entry for the service retirements reduces the amounts previously reported to be consistent with the benefits that are reported in Table 4.

#### Balance Sheet

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

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. 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 Obligation. 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 between 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 begin to cover not only the interest but 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

Two plan changes since the last valuation have increased the Unfunded Actuarial Accrued Liability by \$8,764,000.

The major plan change involved the addition of a possible annual lump sum bonus. The maximum bonus payment is 1.0% of assets, in conjunction with a required minimum investment return of 6.0% before the bonus is payable. A minor benefit change was the increase from 3.5% to 5.0% in the interest for refunds upon death in New Coordinated Plan.

### Old and New

Table 2 allocates the Current Assets between the Old and New Programs based on

the following assumptions:

- o Lines G1 and G2 were allocated on reported payroll.
- o Line H1 was allocated on benefit payments.
- o Refunds were allocated by assuming two-thirds were from Old Plan.
- o Expenses were allocated based on beginning of the year assets(Line F1).
- o The Transfers at Retirement, line K2, represents the present value of benefits for those Old Plan members who elected benefits under the New Plan.

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>
Old	11.85%	13.30%
New	8.98%	8.90%
Combined	11.55%	12.84%

TABLE 1

## DULUTH TEACHERS' RETIREMENT FUND

ACCOUNTING BALANCE SHEET  
(DOLLARS IN THOUSANDS)

July 1, 1985

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS		
1. Cash and Cash Equivalents	\$2,989	\$2,989
2. Investments		
a. Fixed Income	19,436	17,404
b. Equity	39,200	27,713
c. Real Estate	44	44
3. Equity in Minnesota Post-Retirement Investment Fund (MPRIF)	0	0
4. Other	1,186	1,186
B. TOTAL ASSETS	----- \$62,855 =====	----- \$49,336 =====
C. AMOUNTS CURRENTLY PAYABLE	\$3	\$3
D. ASSETS AVAILABLE FOR BENEFITS		
1. Member Reserves	\$12,418	\$12,418
2. Employer Reserves	50,434	36,915
3. MPRIF Reserves	0	0
4. Non-MPRIF Reserves	0	0
5. Total Assets Available for Benefits	----- \$62,852 -----	----- \$49,333 -----
E. TOTAL AMOUNTS CURRENTLY PAYABLE AND ASSETS AVAILABLE FOR BENEFITS	----- \$62,855 =====	----- \$49,336 =====
<hr/>		
F. DETERMINATION OF ACTUARIAL VALUE OF ASSETS		
1. Cost Value of Assets Available for Benefits (D5)		\$49,333
2. Market Value (D5)	\$62,852	
3. Cost Value (D5)	49,333	
4. Market Over Cost (F2-F3)	----- \$13,519	
5. 1/3 of Market Over Cost(F4)/3		4,506
6. Actuarial Value of Assets (F1+F5) (Same as "Current Assets")		----- \$53,839 =====

TABLE 2

## DULUTH TEACHERS' RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1985

	<u>MARKET VALUE</u>	<u>COST VALUE</u>
A. ASSETS AVAILABLE AT BEGINNING OF YEAR	\$48,264	\$45,897
B. OPERATING REVENUES		
1. Member Contributions	\$1,427	\$1,427
2. Employer Contributions	1,751	1,751
3. Investment Income	3,872	3,872
4. MPRIF Income	0	0
5. Net Realized Gain (Loss)	1,415	1,415
6. Other	2	2
7. Net Change in Unrealized Gain (Loss)	11,152	0
	-----	-----
8. Total Revenue	\$19,619	\$8,467
	-----	-----
C. OPERATING EXPENSES		
1. Service Retirements	\$2,275	\$2,275
2. Disability Benefits	27	27
3. Survivor Benefits	56	56
4. Refunds	656	656
5. Expenses	226	226
6. Other	0	0
	-----	-----
7. Total Disbursements	\$3,240	\$3,240
	-----	-----
D. CHANGES IN ACCOUNTING METHOD	(1,791)	(1,791)
E. ASSETS AVAILABLE AT END OF YEAR	\$62,852	\$49,333
	=====	=====

TABLE 2  
(cont)

## DULUTH TEACHERS' RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1985

	<u>OLD</u>	<u>NEW</u>	<u>TOTAL</u>
F. BEGINNING OF YEAR			
1. Current Assets	\$45,663	\$2,196	\$47,859
2. MPRIF Reserves	0	0	0
3. Allocable Assets(A1-A2)	45,663	2,196	47,859
G. RECEIPTS			
1. Member Contributions	1,279 *	148 *	1,427
2. Employer Contributions	1,570 *	181 *	1,751
3. Other	2 *	0 *	2
	-----	-----	-----
4. Total	2,851	329	3,180
H. DISBURSEMENTS			
1. MPRIF New Annuitants	0	0	0
2. Non-MPRIF Benefits	2,036 *	322 *	2,358
3. Refunds	438 *	218 *	656
4. Expenses	215 *	11 *	226
5. Other	0	0	0
	-----	-----	-----
6. Total	2,689	551	3,240
I. EXPECTED INVESTMENT RETURN 8% OF (F3+.5XG4-.5XH6)	3,660	167	3,827
J. ALLOCATION OF REMAINING ASSETS IN PROPORTION TO LINE I	2,116	97	2,213
K. END OF YEAR			
1. Allocable Assets	51,601	2,238	53,839
2. Transfers at Retirement	(2,754)	2,754	0
3. Current Assets	48,847	4,992	53,839

\* Allocated by Wyatt



TABLE 3

## DULUTH TEACHERS' RETIREMENT FUND

## ACTIVE MEMBERS AS OF JUNE 30, 1985

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	3	6							9
25-29	13	20	3						36
30-34	96	60	51	16					223
35-39	9	32	39	82	20				182
40-44	9	19	47	51	85	16			227
45-49	4	12	22	26	53	38	6		161
50-54	3	8	12	31	44	41	33	3	175
55-59	2	2	11	14	38	25	29	14	135
60-64	1		3	5	10	8	2	3	32
65+			1			1			2
TOTAL	140	159	189	225	250	129	70	20	1,182

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	10,663	17,397							15,153
25-29	8,979	12,828	19,011						11,953
30-34	5,313	16,725	19,930	24,562					13,107
35-39	7,092	14,850	21,216	29,962	31,424				24,460
40-44	10,239	21,136	25,039	29,648	30,769	29,334			27,609
45-49	6,719	15,306	23,720	30,553	31,406	31,761	32,634		28,534
50-54	2,939	21,986	28,401	29,648	30,628	32,498	33,917	28,783	30,459
55-59	10,415	14,125	23,841	26,699	32,067	32,692	33,089	36,894	31,089
60-64	1,855		20,576	30,387	33,745	28,977	31,816	29,636	29,291
65+			18,246			30,420			24,333
ALL	6,237	16,535	22,659	29,338	31,248	31,692	33,404	34,589	24,802

## 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
873	2,629	4,283	6,601	7,812	4,088	2,338	692	29,316

TABLE 4

## DULUTH TEACHERS' RETIREMENT FUND

## SERVICE RETIREMENTS AS OF JUNE 30, 1985

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	25	22						47
60-64	23	55	14					92
65-69	2	48	44	3				97
70-74		1	52	32	2			87
75-79			1	79	23	1		104
80-84				14	41	8	1	64
85+					13	30	28	71
TOTAL	50	126	111	128	79	39	29	562

## 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	5,586	3,052						4,400
60-64	6,400	5,391	2,704					5,234
65-69	5,418	5,003	3,711	3,040				4,365
70-74		4,499	3,559	3,840	3,078			3,662
75-79			825	4,077	2,952	1,723		3,775
80-84				4,305	3,203	2,631	2,498	3,361
85+					4,114	3,290	2,950	3,307
ALL	5,954	4,828	3,487	4,019	3,277	3,114	2,934	4,044

## 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>
298	609	387	514	259	121	85	2,273

TABLE 5

## DULUTH TEACHERS' RETIREMENT FUND

## DISABILITY RETIREMENTS AS OF JUNE 30, 1985

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

## AVERAGE ANNUAL BENEFIT

AGE	YEARS DISABLED							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54			2,724					2,724
55-59		5,374	2,381					3,878
60-64	5,735	4,780						5,019
65-69								0
70-74								0
75-79								0
80-84							1,090	1,090
85+								0
TOTAL	5,735	4,929	2,553	0	0	0	1,090	3,956

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

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
6	20	5	0	0	0	1	32

TABLE 6

## DULUTH TEACHERS' RETIREMENT FUND

SURVIVORS AS OF JUNE 30, 1985

AGE	YEARS SINCE DEATH							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		1	1			3
65-69			3	2	2			7
70-74			1	2				3
75-79	1		1	1	1			4
80-84			1	1	1	1		4
85+						1		1
TOTAL	1	2	6	7	5	2	0	23

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59		5,920						5,920
60-64		6,042		2,346	902			3,097
65-69			3,113	845	1,901			2,119
70-74			3,059	3,378				3,272
75-79	2,520		4,580	3,312	2,389			3,200
80-84			1,909	1,675	1,453	1,439		1,619
85+						1,549		1,549
ALL	2,520	5,981	3,148	2,254	1,709	1,494	0	2,638

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

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
3	12	18	16	9	3	0	61

TABLE 7

## DULUTH TEACHERS' RETIREMENT FUND

## RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1984	1,137	47	0
B. Additions	149	9	0
C. Deletions:			
1. Service Retirement	(48)	(2)	
2. Disability	(1)		
3. Death	(4)	0	
4. Terminated-Deferred	(6)		
5. Terminated-Refund	(45)	(2)	0
6. Terminated-Other Non-vested	0		
7. Returned as Active		(2)	0
D. Data Adjustments	0	0	0
	Vested	694	
	Non-Vested	488	
E. Total on June 30, 1985	1,182	50	0

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1984	531	8	23
B. Additions	52	1	1
C. Deletions:			
1. Service Retirement		0	
2. Death	(22)	0	0
3. Annuity Expired	0	(1)	(1)
4. Returned as Active	0	0	
D. Data Adjustments	1	0	0
E. Total on June 30, 1985	562	8	23

TABLE 8

## DULUTH TEACHERS' RETIREMENT FUND

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1985

A. CURRENT ASSETS (TABLE 1, F6)				\$53,839
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				9,537
2. Present Value of Future Normal Costs				31,688
3. Total Expected Future Assets				41,225
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$95,064
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$20,712		\$20,712
b. Disability Benefits		234		234
c. Surviving Spouse's Benefits		508		508
d. Surviving Children's Benefits		0		0
2. Deferred Retirements		368		368
3. Former Members without Vested Rights		0		0
4. Active Members				
a. Retirement Annuities	2,307	34,506		36,813
b. Disability Benefits	260	2,267		2,527
c. Survivors' Benefits	91	1,038		1,129
d. Deferred Retirements	184	1,842		2,026
e. Refund Liability Due to Death or Withdrawal	259	154		413
5. Total Current Benefit Obligations	\$3,101	\$61,629		\$64,730
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$38,112
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$102,842
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$10,891
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$7,778

TABLE 9

## DULUTH TEACHERS' RETIREMENT FUND

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

JULY 1, 1985

	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	\$71,067	\$25,705	\$45,362
b. Disability Benefits	4,201	2,115	2,086
c. Survivors Benefits	1,960	747	1,213
d. Deferred Retirements	2,878	1,641	1,237
e. Refunds Due to Death or Withdrawal	913	1,480	(567)
f. Total	<u>\$81,019</u>	<u>\$31,688</u>	<u>\$49,331</u>
2. Deferred Retirements	\$368		\$368
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	21,455		21,455
6. Total AAL	<u>\$102,842</u>	<u>\$31,688</u>	<u>\$71,154</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$71,154
2. Current Assets (Table 1,F6)			53,839
3. UAAL (B1-B2)			<u>\$17,315</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls Through the Amortization Date of July 1, 2009			\$615,066
2. Supplemental Contribution Rate (B3/C1)			2.81%

TABLE 10

## DULUTH TEACHERS' RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1985

A. UAAL AT BEGINNING OF YEAR	\$25,315
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$2,824
2. Contribution	(3,178)
3. Interest on A, B1, and B2	2,011
4. Total (B1+B2+B3)	<u>\$1,657</u>
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$26,972
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$1,973
2. Investment Return	(2,213)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	(34)
5. Active Members' Turnover, Retirement, Mortality and Disability	76
6. Other Items	(1,133)
7. Total	<u>(\$1,331)</u>
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D7)	\$25,641
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$8,764
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	(\$17,090)
H. UAAL AT END OF YEAR (E+F+G)	<u><u>\$17,315</u></u>



TABLE 11

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

JULY 1, 1985

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	4.50%	\$1,404
2. Employer Contributions	5.79%	1,808
	-----	-----
3. Total	10.29%	\$3,212
	=====	=====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	6.51%	\$2,032
b. Disability Benefits	0.53%	167
c. Survivors	0.20%	61
d. Deferred Retirement Benefits	0.43%	134
e. Refunds Due to Death or Withdrawal	0.36%	113
	-----	-----
f. Total	8.03%	\$2,507
	-----	-----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$17,315	2.81%	\$878
3. Allowance for Expenses	0.71%	\$222
	-----	-----
4. Total	11.55%	\$3,607
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b>		
(A3-B4)	-1.27%	(\$395)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1985 is \$31,222

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 12

## PROJECTED CASH FLOW (DOLLARS IN THOUSANDS)

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>NON-MPRIF ASSETS YEAR END</u>
1985					\$53,839
1986	\$3,212	\$0	\$2,971	\$4,317	57,813
1987	3,422	0	3,503	4,622	61,730
1988	3,644	0	3,476	4,945	66,175
1989	3,881	0	3,489	5,309	71,157
1990	4,133	0	3,585	5,715	76,646
1991	4,402	0	3,816	6,156	82,554
1992	4,687	0	4,073	6,629	88,899
1993	4,992	0	4,486	7,133	95,573
1994	5,317	0	5,102	7,655	102,408
1995	5,663	0	5,596	8,195	109,564
1996	6,030	0	6,172	8,760	117,000
1997	6,423	0	7,021	9,336	124,481
1998	6,840	0	7,639	9,927	132,272
1999	7,284	0	8,418	10,537	140,259
2000	7,758	0	9,018	11,170	148,667
2001	8,263	0	9,790	11,832	157,382
2002	8,800	0	10,562	12,520	166,459
2003	9,371	0	11,532	13,230	175,753
2004	9,980	0	12,459	13,961	185,362
2005	10,629	0	13,500	14,714	195,233
2006	11,320	0	14,704	15,483	205,259
2007	12,057	0	16,334	16,249	215,059
2008	12,840	0	17,770	17,007	224,864
2009	13,675	0	18,947	17,778	234,997
2010	14,563	0	20,163	18,576	245,493

TABLE 13

**DULUTH TEACHERS' RETIREMENT FUND**  
**SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS**

Interest:	Pre-Retirement: 8% per annum Post-Retirement: 8% per annum
Salary Increases:	Reported salary increased 6.5% to current fiscal year and 6.5% annually for each future year.
Mortality:	Pre-Retirement: Male - 1971 GAM female rates Female - 1971 GAM female rates  Post-Retirement: Male - Same as above Female - Same as above  Post-Disability: Male - 1977 RRB rates Female - 1977 RRB rates
Retirement Age:	Old Plan: Age 63 New Plan: Age 63 with 30 years of service or age 65. Plus 50 % of employees eligible for Rule of 85 are assumed to retire on June 30, 1985 and remainder of eligible employees retire on June 30, 1986.
Separation:	Graded rates shown in rate table.
Disability:	Rates as shown in rate table.
Expenses:	Prior year expenses expressed as percentage of prior year payroll. (0.71% of payroll)
Return of Contributions:	Employees withdrawing after 10 years of service were assumed to choose a refund only if the amount of their accumulated contributions is greater than the present value of the deferred retirement benefit.
Family Composition:	80% of members are assumed to be married. Female is three years younger than male.
Social Security:	NA
Benefit Increases After Retirement:	NA

TABLE 13  
(cont)

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. Members in the Old Plan who were hired prior to age 33 are assumed to receive their retirement benefits from the New Plan. Members who terminated under Old Plan are assumed to take refund under the New Plan.
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.

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	3	3	2,000	2,000	28	28	0	0
21	3	3	1,931	1,931	28	28	0	0
22	3	3	1,731	1,731	28	28	0	0
23	3	3	1,532	1,532	28	28	0	0
24	3	3	1,332	1,332	28	28	0	0
25	3	3	1,132	1,132	28	28	0	0
26	4	4	932	932	28	28	0	0
27	4	4	732	732	28	28	0	0
28	4	4	703	703	28	28	0	0
29	4	4	673	673	28	28	0	0
30	5	5	643	643	28	28	0	0
31	5	5	612	612	28	28	0	0
32	5	5	582	582	28	28	0	0
33	6	6	552	552	28	28	0	0
34	6	6	522	522	28	28	0	0
35	7	7	491	491	29	29	0	0
36	7	7	461	461	29	29	0	0
37	8	8	430	430	30	30	0	0
38	8	8	409	409	31	31	0	0
39	9	9	389	389	31	31	0	0
40	9	9	368	368	32	32	0	0
41	10	10	347	347	33	33	0	0
42	11	11	325	325	35	35	0	0
43	12	12	304	304	37	37	0	0
44	13	13	282	282	38	38	0	0
45	14	14	260	260	41	41	0	0
46	15	15	237	237	43	43	0	0
47	17	17	214	214	46	46	0	0
48	18	18	191	191	49	49	0	0
49	20	20	167	167	53	53	0	0
50	22	22	143	143	57	57	0	0
51	23	23	118	118	62	62	0	0
52	25	25	92	92	68	68	0	0
53	27	27	67	67	74	74	0	0
54	30	30	40	40	80	80	0	0

TABLE 13  
(cont)

<u>Age</u>	<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	33	33	13	13	87	87	0	0
56	36	36	0	0	95	95	0	0
57	39	39	0	0	104	104	0	0
58	44	44	0	0	114	114	0	0
59	49	49	0	0	125	125	0	0
60	55	55	0	0	136	136	0	0
61	62	62	0	0	149	149	0	0
62	69	69	0	0	163	163	0	0
63	77	77	0	0	0	0	10,000	10,000
64	86	86	0	0	0	0	0	0
65	96	96	0	0	0	0	0	0
66	106	106	0	0	0	0	0	0
67	116	116	0	0	0	0	0	0
68	129	129	0	0	0	0	0	0
69	145	145	0	0	0	0	0	0
70	165	165	0	0	0	0	0	0

TABLE 15

## DULUTH TEACHERS' RETIREMENT FUND

MEMBERSHIP CHANGES  
(DOLLARS IN THOUSANDS)

JUNE 30, 1985

		<u>NUMBER</u>	<u>PAYROLL</u>
A. ACTIVE MEMBERS			
1. As of the Last Valuation Date		1,137	\$26,778
2. New Entrants		149	1,572
3. Total		1,286	28,350
4. Separations from Active Service			
a. Refund of Contributions	(45)		(501)
b. Separation with Deferred Annuity	(6)		(109)
c. Separation with neither Refund nor Deferred Annuity	0		0
d. Disability	(1)		(29)
e. Death	(4)		(119)
f. Retirement with Service Annuity	(48)		(621)
5. Total Separations	(104)		(1,379)
6. Data Adjustments	0		2,345
7. As of Current Valuation Date	1,182		\$29,316
B. SERVICE RETIREMENT ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		531	\$2,171
2. New Entrants		53	610
3. Total		584	2,781
4. Terminations			
a. Deaths	(22)		(73)
b. Others	0		(35)
5. Total Terminations	(22)		(108)
6. Data Adjustments	0		(400)
7. As of Current Valuation Date	562		\$2,273
C. DISABLED ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		8	\$29
2. New Entrants		1	6
3. Total		9	35
4. Terminations			
a. Deaths	0		0
b. Others	(1)		(3)
5. Total Terminations	(1)		(3)
6. Data Adjustments	0		0
7. As of Current Valuation Date	8		\$32

TABLE 15

(cont)

D. SURVIVING SPOUSE ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	23	\$59
2. New Entrants	1	3
3. Total	24	62
4. Terminations		
a. Deaths	0	0
b. Others	(1)	(1)
5. Total Terminations	(1)	(1)
6. Data Adjustments	0	0
7. As of Current Valuation Date	23	\$61
E. SURVIVING CHILDREN 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
F. DEFERRED ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	47	\$54
2. New Entrants	9	9
3. Total	56	63
4. Terminations		
a. Deaths	0	0
b. Others	(6)	(6)
5. Total Terminations	(6)	(6)
6. Data Adjustments	0	2
7. As of Current Valuation Date	50	\$59



# DULUTH TEACHERS' RETIREMENT FUND

OLD

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>06/30/84 VALUATION</u>	<u>07/01/85 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11A)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	10.29%	10.29%
2. Required Contributions - Chapter 356 % of Payroll	13.14%	11.85%
3. Sufficiency (Deficiency) (A1-A2)	-2.85%	-1.56%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	NA	\$48,847
b. Current Benefit Obligations (Table 8A)	NA	\$59,935
c. Funding Ratio (a/b)	NA	81.50%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$45,663	\$48,847
b. Actuarial Accrued Liability (Table 9A)	\$67,562	\$66,294
c. Funding Ratio (a/b)	67.59%	73.68%
3. Projected Benefit Funding Ratio (Table 8A)		
a. Current and Expected Future Assets	NA	\$85,024
b. Current and Expected Future Benefit Obligations	NA	\$93,634
c. Funding Ratio (a/b)	NA	90.80%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members (Table 3A)		
a. Number	995	924
b. Projected Annual Earnings	\$25,591	\$27,991
c. Average Annual Earnings (Actual \$)	\$25,720	\$30,293
d. Average Age	NA	46.0
e. Average Service	NA	15.0
2. Others		
a. Service Retirements (Table 4A)	514	514
b. Disability Retirements (Table 5A)	8	8
c. Survivors (Table 6A)	23	23
d. Deferred Retirements (Table 7A)	44	47
e. Terminated Other Non-vested (Table 7A)	0	0
f. Total	589	592

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 3A  
OLD

## ACTIVE MEMBERS AS OF JUNE 30, 1985

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25									0
25-29		7	3						10
30-34	3	10	51	16					80
35-39	1	12	39	82	20				154
40-44		3	47	51	85	16			202
45-49	1	3	22	26	53	38	6		149
50-54		1	12	31	44	41	33	3	165
55-59			11	14	38	25	29	14	131
60-64			3	5	10	8	2	3	31
65+			1			1			2
TOTAL	5	36	189	225	250	129	70	20	924

## 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		7,581	19,011						11,010
30-34	14,713	14,716	19,930	24,562					20,009
35-39		12,965	21,216	29,962	31,424				26,418
40-44		11,484	25,039	29,648	30,769	29,334			28,753
45-49		11,404	23,720	30,553	31,406	31,761	32,634		29,649
50-54			28,401	29,648	30,628	32,498	33,917	28,783	31,185
55-59			23,841	26,699	32,067	32,692	33,089	36,894	31,664
60-64			20,576	30,387	33,745	28,977	31,816	29,636	30,177
65+			18,246			30,420			24,333
ALL	8,828	11,791	22,659	29,338	31,248	31,692	33,404	34,589	28,444

## 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
44	424	4,283	6,601	7,813	4,088	2,338	692	26,283

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 4A  
OLD

## SERVICE RETIREMENTS AS OF JUNE 30, 1985

AGE	YEARS RETIRED							TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59	9	20						29
60-64	10	46	14					70
65-69	1	41	44	3				89
70-74		1	52	32	2			87
75-79			1	79	23	1		104
80-84				14	41	8	1	64
85+					13	30	28	71
TOTAL	20	108	111	128	79	39	29	514

## 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	5,071	2,673						3,417
60-64	6,437	4,903	2,704					4,682
65-69	5,383	4,497	3,711	3,040				4,069
70-74		4,499	3,559	3,840	3,078			3,662
75-79			825	4,077	2,952	1,723		3,775
80-84				4,305	3,203	2,631	2,498	3,361
85+					4,114	3,290	2,950	3,307
ALL	5,769	4,332	3,487	4,019	3,277	3,114	2,934	3,794

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

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
115	468	388	514	259	121	85	1,950

**DULUTH TEACHERS' RETIREMENT FUND**

**TABLE 5A  
OLD**

**DISABILITY RETIREMENTS AS OF JUNE 30, 1985**

<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								0
50-54			1					1
55-59		1	1					2
60-64	1	3						4
65-69								0
70-74								0
75-79								0
80-84							1	1
85+								0
TOTAL	1	4	2	0	0	0	1	8

**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								0
50-54			2,724					2,724
55-59		5,374	2,381					3,878
60-64	5,735	4,780						5,019
65-69								0
70-74								0
75-79								0
80-84							1,090	1,090
85+								0
TOTAL	5,735	4,929	2,553	0	0	0	1,090	3,956

**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>
6	20	5	0	0	0	1	32

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 6A  
OLD

## SURVIVORS AS OF JUNE 30, 1985

AGE	YEARS SINCE DEATH							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		1	1			3
65-69			3	2	2			7
70-74			1	2				3
75-79	1		1	1	1			4
80-84			1	1	1	1		4
85+						1		1
TOTAL	1	2	6	7	5	2	0	23

## AVERAGE ANNUAL BENEFIT

AGE	YEARS SINCE DEATH							ALL
	<1	1-4	5-9	10-14	15-19	20-24	25+	
<50								0
50-54								0
55-59		5,920						5,920
60-64		6,042		2,346	902			3,097
65-69			3,113	845	1,901			2,119
70-74			3,059	3,378				3,272
75-79	2,520		4,580	3,312	2,389			3,200
80-84			1,909	1,675	1,453	1,439		1,619
85+						1,549		1,549
ALL	2,520	5,981	3,148	2,254	1,709	1,494	0	2,638

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

<1	1-4	5-9	10-14	15-19	20-24	25+	TOTAL
3	12	18	16	9	3	0	61

**DULUTH TEACHERS' RETIREMENT FUND**  
**RECONCILIATION OF MEMBERS**

TABLE 7A  
OLD

	<u>ACTIVES</u>	<u>TERMINATED</u> <u>DEFERRED</u> <u>RETIREMENT</u>	<u>OTHER</u> <u>NON-VESTED</u>
A. On June 30, 1984	995	44	0
B. Additions	2	8	0
C. Deletions:			
1. Service Retirement	(48)	(1)	
2. Disability	(1)		
3. Death	(4)	0	
4. Terminated-Deferred	(5)		
5. Terminated-Refund	(15)	(2)	0
6. Terminated-Other Non-vested	0		
7. Returned as Active		(2)	0
D. Data Adjustments	0	0	0
Vested	694		
Non-Vested	230		
E. Total on June 30, 1985	924	47	0

	<u>RETIRED</u> <u>ANNUITANTS</u>	<u>RECIPIENTS</u> <u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1984	514	8	23
B. Additions	22	1	1
C. Deletions:			
1. Service Retirement		0	
2. Death	(22)	0	0
3. Annuity Expired	0	(1)	(1)
4. Returned as Active	0	0	
D. Data Adjustments	0	0	0
E. Total on June 30, 1985	514	8	23

**DULUTH TEACHERS' RETIREMENT FUND**

**TABLE 8A  
OLD**

**ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)**

**JULY 1, 1985**

A. CURRENT ASSETS (TABLE 2, K3)				\$48,847
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				8,817
2. Present Value of Future Normal Costs				27,340
3. Total Expected Future Assets				----- 36,157 -----
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				----- \$85,004 =====
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>	<u>Total</u>	
1. Benefit Recipients				
a. Retirement Annuities		\$16,252		\$16,252
b. Disability Benefits		234		234
c. Surviving Spouse's Benefits		508		508
d. Surviving Children's Benefits		0		0
2. Deferred Retirements		362		362
3. Former Members without Vested Rights		0		0
4. Active Members				
a. Retirement Annuities	2,087	34,506		36,593
b. Disability Benefits	232	2,267		2,499
c. Survivors' Benefits	87	1,038		1,125
d. Deferred Retirements	181	1,842		2,023
e. Refund Liability Due to Death or Withdrawal	185	154		339
5. Total Current Benefit Obligations	----- \$2,772 -----	----- \$57,163 -----		----- \$59,935 -----
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				----- \$33,699 -----
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				----- \$93,634 =====
G. CURRENT UNFUNDED LIABILITY (D5-A)				\$11,088
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				\$8,630

DULUTH TEACHERS' RETIREMENT FUND

TABLE 9A  
OLD

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

JULY 1, 1985

	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	\$67,172	\$22,132	\$45,040
b. Disability Benefits	3,841	1,782	2,059
c. Survivors Benefits	1,889	685	1,204
d. Deferred Retirements	2,842	1,610	1,232
e. Refunds Due to Death or Withdrawal	533	1,131	(598)
f. Total	<u>\$76,277</u>	<u>\$27,340</u>	<u>\$48,937</u>
2. Deferred Retirements	\$362		\$362
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	16,995		16,995
6. Total AAL	<u>\$93,634</u>	<u>\$27,340</u>	<u>\$66,294</u>
B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)			
1. AAL (A6)			\$66,294
2. Current Assets (Table 2, K3)			48,847
3. UAAL (B1-B2)			<u>\$17,447</u>
C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$551,421
2. Supplemental Contribution Rate (B3/C1)			3.16%



DULUTH TEACHERS' RETIREMENT FUND

TABLE 10A  
OLD

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

YEAR ENDING JUNE 30, 1985

A. UAAL AT BEGINNING OF YEAR	\$21,900
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$2,544
2. Contribution	(2,849)
3. Interest on A, B1, and B2	1,740
	-----
4. Total (B1+B2+B3)	\$1,435
	-----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$23,335
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	\$2,009
2. Investment Return	(2,116)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	(45)
5. Active Members' Turnover, Retirement, Mortality and Disability	123
6. Other Items	1,629
	-----
7. Total	\$1,600
	-----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D7)	\$24,935
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$8,372
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	(\$15,860)
	-----
H. UAAL AT END OF YEAR (E+F+G)	\$17,447
	=====

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

TABLE 11A  
OLD

JULY 1, 1985

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	4.50%	\$1,259
2. Employer Contributions	5.79%	1,621
	-----	-----
3. Total	10.29%	\$2,880
	=====	=====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	6.46%	\$1,807
b. Disability Benefits	0.52%	146
c. Survivors	0.20%	57
d. Deferred Retirement Benefits	0.47%	132
e. Refunds Due to Death or Withdrawal	0.33%	91
	-----	-----
f. Total	7.98%	\$2,233
	-----	-----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$17,447	3.16%	\$885
3. Allowance for Expenses	0.71%	\$199
	-----	-----
4. Total	11.85%	\$3,317
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b>		
(A3-B4)	-1.56%	(\$437)

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1985 is \$27,991

## DULUTH TEACHERS' RETIREMENT FUND

TABLE 12A  
OLDPROJECTED CASH FLOW  
JULY 1, 1985

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS TO NEW PLAN</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>
1985					\$48,847
1986	\$2,880	\$1,800	\$2,234	\$3,862	51,039
1987	2,870	340	2,737	4,075	54,358
1988	2,932	76	2,750	4,353	58,229
1989	3,004	72	2,784	4,664	62,411
1990	3,066	405	2,844	4,986	66,542
1991	3,084	397	3,031	5,310	70,793
1992	3,126	1,165	3,157	5,616	74,460
1993	3,116	2,351	3,321	5,855	76,982
1994	3,050	2,758	3,615	6,026	78,888
1995	3,027	2,306	3,821	6,187	81,155
1996	2,997	3,306	4,011	6,320	82,324
1997	2,889	5,298	4,263	6,319	81,151
1998	2,845	3,795	4,411	6,278	81,247
1999	2,748	4,395	4,675	6,247	80,361
2000	2,715	3,241	4,845	6,214	80,392
2001	2,657	5,331	4,953	6,126	78,102
2002	2,581	4,907	5,121	5,950	75,839
2003	2,471	7,749	5,198	5,648	70,300
2004	2,373	7,304	5,244	5,217	64,689
2005	2,235	6,737	5,408	4,779	58,962
2006	2,062	9,630	5,460	4,196	49,629
2007	1,776	13,195	5,528	3,292	35,614
2008	1,542	12,508	5,433	2,193	21,194
2009	1,355	9,163	5,345	1,169	9,118
2010	1,183	9,018	5,246	206	(3,719)

**DULUTH TEACHERS' RETIREMENT FUND****TABLE 14A  
OLD****SUMMARY OF PLAN PROVISIONS**

Eligibility	A teacher who is employed by the Board of Education of the City of Duluth. Also includes any employees of the Retirement Fund and certain part-time employees licensed by the state Board of Education. Employees in the Old Plan are those hired before July 1, 1981 who have not elected to join the New Plan.
Contributions Member	4.5% of Salary.
Employer	5.79% of Salary.
Credited Service	Earned while employed by the school district in a position with respect to which regular contributions are made. Credit is granted for service less than a legal school year on a prorata basis.
Salary	Annual contract salary.
Average Salary	Average of the 5 highest years of annual salary.
<b>RETIREMENT</b>	
Normal Retirement Benefit	
Eligibility	Age 60 and 1 year of Allowable Service. Rule of 85: Age 55 and age plus Allowable Service totals 85 and retirement prior to 1/1/87.
Amount	1.25% of Average Salary for each year of Credited Service. Minimum benefit for employees who were members on June 30, 1971 is equal to the actuarial equivalent of 2.4 times the accumulated regular contributions.
Early Retirement Benefit	
Eligibility	Age 55 and 10 years of Credited Service.
Amount	Normal Retirement Benefit based on Credited Service and Average Salary at retirement date. The benefit is reduced 0.5% for each month the Member is under age 60.
Form of Payment	Life annuity. Actuarially equivalent options are: 5, 10, 15 or 20 year certain and life 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary) 50% or 100% joint and survivor Other equivalent options approved by the Board.

**TABLE 14A**  
**OLD**  
**(cont)**

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 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 previous 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 an least 3 years.
-------------------	---

**DISABILITY**

Disability Benefit  
Eligibility

Totally and permanently disabled before the age of 60 with 5 years of Credited Service.

Amount

Normal Retirement Benefit based on Credited Service and Average Salary at disability date without reduction for early commencement. Amount is reduced for Worker's Compensation.

Payment stops at age 60 or earlier if disability ceases or death occurs.

Form of Payment

Same as for retirement.

Benefit Increases

Same as for retirement.

**DEATH**

Return of Contributions I  
Eligibility

Death while active.

Amount

Two times regular contributions accumulated with 5% interest.

Return of Contributions II  
Eligibility

Death of Member who terminated employment after 10 years of service.

Amount

Regular contributions accumulated with 5% interest.

Return of Contributions III  
Eligibility

Death of a retired or disabled Member whose benefits have commenced in the form of a life annuity or the death of a survivor of a retired or disabled Member under a joint and survivor option.

Amount

Excess of regular contributions accumulated with 5% interest in excess of benefits paid.

TABLE 14A  
OLD  
(cont)

Surviving Spouse  
Optional Annuity I  
Eligibility

Death of active Member with 10 years of Credited Service.

Amount

In lieu of Return of Contributions I, an annuity to surviving spouse equivalent to 120% of the value of what would have been refunded.

Surviving Spouse  
Optional Annuity II  
Eligibility

Death of active Member who is age 55 with 10 years of Credited Service.

Amount

In lieu of Return of Contributions I or Surviving Spouse Optional Annuity I, spouse receives survivor portion of the joint and 100% contingent annuity the Member could have elected if terminated.

# **TERMINATION**

Refund of Employee  
Contributions  
Eligibility

Termination from teaching service.

Amount

Member's contributions with 5% interest. A deferred annuity may be elected in lieu of a refund if the Member has 10 years of Credited Service.

Deferred Annuity  
Eligibility

10 years of Credited Service.

Amount

Benefit computed under law in effect at termination. Amount is payable as a normal or early retirement.

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 15A  
OLD

## MEMBERSHIP CHANGES (DOLLARS IN THOUSANDS)

JUNE 30, 1985

A. ACTIVE MEMBERS		<u>NUMBER</u>	<u>PAYROLL</u>
1. As of the Last Valuation Date		995	\$24,628
2. New Entrants		2	22
3. Total		997	24,650
4. Separations from Active Service			
a. Refund of Contributions	(15)		(192)
b. Separation with Deferred Annuity	(5)		(79)
c. Separation with neither Refund nor Deferred Annuity	0		0
d. Disability	(1)		(29)
e. Death	(4)		(119)
f. Retirement with Service Annuity	(48)		(621)
5. Total Separations	(73)		(1,040)
6. Data Adjustments	0		2,673
7. As of Current Valuation Date		924	\$26,283
B. SERVICE RETIREMENT ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		514	\$2,008
2. New Entrants		22	186
3. Total		536	2,194
4. Terminations			
a. Deaths	(22)		(73)
b. Others	0		(35)
5. Total Terminations	(22)		(108)
6. Data Adjustments	0		(136)
7. As of Current Valuation Date		514	\$1,950
C. DISABLED ANNUITANTS		<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date		8	\$29
2. New Entrants		1	6
3. Total		9	35
4. Terminations			
a. Deaths	0		0
b. Others	(1)		(3)
5. Total Terminations	(1)		(3)
6. Data Adjustments	0		0
7. As of Current Valuation Date		8	\$32

TABLE 15A  
OLD  
(cont)

D. SURVIVING SPOUSE ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	23	\$59
2. New Entrants	1	3
3. Total	24	62
4. Terminations		
a. Deaths	0	0
b. Others	(1)	(1)
5. Total Terminations	(1)	(1)
6. Data Adjustments	0	0
7. As of Current Valuation Date	23	\$61
E. SURVIVING CHILDREN 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
F. DEFERRED ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1. As of the Last Valuation Date	44	\$52
2. New Entrants	8	9
3. Total	52	61
4. Terminations		
a. Deaths	0	0
b. Others	(5)	(5)
5. Total Terminations	(5)	(5)
6. Data Adjustments	0	2
7. As of Current Valuation Date	47	\$58



# DULUTH TEACHERS' RETIREMENT FUND

NEW

## REPORT HIGHLIGHTS (DOLLARS IN THOUSANDS)

	<u>06/30/84 VALUATION</u>	<u>07/01/85 VALUATION</u>
<b>A. CONTRIBUTIONS (TABLE 11B)</b>		
1. Statutory Contributions - Chapter 354A % of Payroll	10.29%	10.29%
2. Required Contributions - Chapter 356 % of Payroll	14.25%	8.98%
3. Sufficiency (Deficiency) (A1-A2)	-3.96%	1.31%
<b>B. FUNDING RATIOS</b>		
1. Accrued Benefit Funding Ratio		
a. Current Assets (Table 2)	NA	\$4,992
b. Current Benefit Obligations (Table 8B)	NA	\$4,795
c. Funding Ratio (a/b)	NA	104.11%
2. Accrued Liability Funding Ratio		
a. Current Assets (Table 2)	\$2,197	\$4,992
b. Actuarial Accrued Liability (Table 9B)	\$5,612	\$4,860
c. Funding Ratio (a/b)	39.15%	102.72%
3. Projected Benefit Funding Ratio (Table 8B)		
a. Current and Expected Future Assets	NA	\$10,040
b. Current and Expected Future Benefit Obligations	NA	\$9,208
c. Funding Ratio (a/b)	NA	109.04%
<b>C. PLAN PARTICIPANTS</b>		
1. Active Members (Table 3B)		
a. Number	142	258
b. Projected Annual Earnings	\$2,928	\$3,231
c. Average Annual Earnings (Actual \$)	\$20,622	\$12,523
d. Average Age	NA	34.6
e. Average Service	NA	1.1
2. Others		
a. Service Retirements (Table 4B)	17	48
b. Disability Retirements (Table 5B)	0	0
c. Survivors (Table 6B)	0	0
d. Deferred Retirements (Table 7B)	3	3
e. Terminated Other Non-vested (Table 7B)	0	0
f. Total	20	51

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 3B  
NEW

## ACTIVE MEMBERS AS OF JUNE 30, 1985

AGE	YEARS OF SERVICE								TOTAL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	3	6							9
25-29	13	13							26
30-34	93	50							143
35-39	8	20							28
40-44	9	16							25
45-49	3	9							12
50-54	3	7							10
55-59	2	2							4
60-64	1								1
65+									0
TOTAL	135	123	0	0	0	0	0	0	258

## AVERAGE ANNUAL EARNINGS

AGE	YEARS OF SERVICE								ALL
	<1	1-4	5-9	10-14	15-19	20-24	25-29	30+	
<25	10,663	17,397							15,153
25-29	8,979	15,653							12,316
30-34	5,010	17,127							9,246
35-39	7,979	15,981							13,695
40-44	10,239	22,946							18,371
45-49	8,958	16,606							14,694
50-54	2,939	25,127							18,471
55-59	10,415	14,125							12,270
60-64	1,855								1,855
65+									0
ALL	6,141	17,923	0	0	0	0	0	0	11,758

## 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
829	2,205	0	0	0	0	0	0	3,034

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 4B  
NEW

## SERVICE RETIREMENTS AS OF JUNE 30, 1985

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	16	2						18
60-64	13	9						22
65-69	1	7						8
70-74								0
75-79								0
80-84								0
85+								0
TOTAL	30	18	0	0	0	0	0	48

## 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	5,876	6,847						5,984
60-64	6,371	7,886						6,991
65-69	5,453	7,967						7,653
70-74								0
75-79								0
80-84								0
85+								0
ALL	6,077	7,802	0	0	0	0	0	6,724

## 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>
183	140	0	0	0	0	0	323

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 7B  
NEW

## RECONCILIATION OF MEMBERS

	<u>ACTIVES</u>	<u>TERMINATED</u>	
		<u>DEFERRED RETIREMENT</u>	<u>OTHER NON-VESTED</u>
A. On June 30, 1984	142	3	0
B. Additions	147	1	0
C. Deletions:			
1. Service Retirement	0	(1)	
2. Disability	0		
3. Death	0	0	
4. Terminated-Deferred	(1)		
5. Terminated-Refund	(30)	0	0
6. Terminated-Other Non-vested	0		
7. Returned as Active		0	0
D. Data Adjustments	0	0	0
	Vested 0		
	Non-Vested 258		
E. Total on June 30, 1985	258	3	0

	<u>RECIPIENTS</u>		
	<u>RETIREMENT ANNUITANTS</u>	<u>DISABLED</u>	<u>SURVIVORS</u>
A. On June 30, 1984	17	0	0
B. Additions	30	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	1	0	0
E. Total on June 30, 1985	48	0	0

DULUTH TEACHERS' RETIREMENT FUND

TABLE 8B  
NEW

ACTUARIAL BALANCE SHEET  
(DOLLARS IN THOUSANDS)

JULY 1, 1985

A. CURRENT ASSETS (TABLE 2, K3)				\$4,992
B. EXPECTED FUTURE ASSETS				
1. Present Value of Expected Future Supplemental Contributions				700
2. Present Value of Future Normal Costs				4,348
3. Total Expected Future Assets				5,048
C. TOTAL CURRENT AND EXPECTED FUTURE ASSETS				\$10,040
D. CURRENT BENEFIT OBLIGATIONS	<u>Non-Vested</u>	<u>Vested</u>		<u>Total</u>
1. Benefit Recipients				
a. Retirement Annuities		\$4,460		\$4,460
b. Disability Benefits		0		0
c. Surviving Spouse's Benefits		0		0
d. Surviving Children's Benefits		0		0
2. Deferred Retirements		6		6
3. Former Members without Vested Rights		0		0
4. Active Members				
a. Retirement Annuities	220	0		220
b. Disability Benefits	28	0		28
c. Survivors' Benefits	4	0		4
d. Deferred Retirements	3	0		3
e. Refund Liability Due to Death or Withdrawal	74	0		74
5. Total Current Benefit Obligations	\$329	\$4,466		\$4,795
E. EXPECTED FUTURE BENEFIT OBLIGATIONS				\$4,413
F. TOTAL CURRENT AND EXPECTED FUTURE BENEFIT OBLIGATIONS				\$9,208
G. CURRENT UNFUNDED LIABILITY (D5-A)				(\$197)
H. CURRENT AND FUTURE UNFUNDED LIABILITY (F-C)				(\$832)

**DULUTH TEACHERS' RETIREMENT FUND**

**TABLE 9B  
NEW**

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

**JULY 1, 1985**

	<u>ACTUARIAL PRESENT VALUE OF PROJECTED BENEFITS</u> (1)	<u>ACTUARIAL PRESENT VALUE OF FUTURE NORMAL COSTS</u> (2)	<u>ACTUARIAL ACCRUED LIABILITY</u> (3)=(1)-(2)
<b>A. DETERMINATION OF ACTUARIAL ACCRUED LIABILITY (AAL)</b>			
1. Active Members			
a. Retirement Annuities	\$3,895	\$3,573	\$322
b. Disability Benefits	360	333	27
c. Survivors Benefits	71	62	9
d. Deferred Retirements	36	31	5
e. Refunds Due to Death or Withdrawal	380	349	31
	-----	-----	-----
f. Total	\$4,742	\$4,348	\$394
	-----	-----	-----
2. Deferred Retirements	\$6		\$6
3. Former Members Without Vested Rights	0		0
4. Annuitants in MPRIF	0		0
5. Recipients Not in MPRIF	4,460		4,460
	-----	-----	-----
6. Total AAL	\$9,208	\$4,348	\$4,860
	=====	=====	=====
<b>B. DETERMINATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)</b>			
1. AAL (A6)			\$4,860
2. Current Assets (Table 2, K3)			4,992
			-----
3. UAAL (B1-B2)			(\$132)
			=====
<b>C. DETERMINATION OF SUPPLEMENTAL CONTRIBUTION RATE</b>			
1. Present Value of Future Payrolls to the Amortization Date of July 1, 2009			\$63,645
2. Supplemental Contribution Rate (B3/C1)			-0.21%

## DULUTH TEACHERS' RETIREMENT FUND

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

YEAR ENDING JUNE 30, 1985

A. UAAL AT BEGINNING OF YEAR	\$3,415
B. CHANGE DUE TO INTEREST REQUIREMENTS AND CURRENT RATE OF FUNDING	
1. Normal Cost and Expenses	\$280
2. Contribution	(329)
3. Interest on A, B1, and B2	271
	-----
4. Total (B1+B2+B3)	\$222
	-----
C. EXPECTED UAAL AT END OF YEAR (A+B4)	\$3,637
D. INCREASE (DECREASE) DUE TO ACTUARIAL LOSSES (GAINS) BECAUSE OF EXPERIENCE DEVIATIONS FROM EXPECTED	
1. Salary Increases	(\$36)
2. Investment Return	(97)
3. MPRIF Mortality	0
4. Mortality of Other Benefit Recipients	11
5. Active Members' Turnover, Retirement, Mortality and Disability	(47)
6. Other Items	(2,762)
	-----
7. Total	(\$2,931)
	-----
E. UAAL AT END OF YEAR BEFORE PLAN AMENDMENTS AND CHANGES IN ACTUARIAL ASSUMPTIONS (C+D7)	\$706
F. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO PLAN AMENDMENTS	\$392
G. CHANGE IN ACTUARIAL ACCRUED LIABILITY DUE TO CHANGES IN ACTUARIAL ASSUMPTIONS	(\$1,230)
	-----
H. UAAL AT END OF YEAR (E+F+G)	(\$132)
	=====

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

**TABLE 11B**  
**NEW**

**JULY 1, 1985**

	<u>% OF PAYROLL</u>	<u>\$ AMOUNT</u>
<b>A. STATUTORY CONTRIBUTIONS - CHAPTER 354A</b>		
1. Employee Contributions	4.50%	\$145
2. Employer Contributions	5.79%	187
	-----	-----
3. Total	10.29%	\$332
	=====	=====
<b>B. REQUIRED CONTRIBUTIONS - CHAPTER 356</b>		
1. Normal Cost		
a. Retirement Benefits	6.97%	\$225
b. Disability Benefits	0.65%	21
c. Survivors	0.12%	4
d. Deferred Retirement Benefits	0.06%	2
e. Refunds Due to Death or Withdrawal	0.68%	22
	-----	-----
f. Total	8.48%	\$274
	-----	-----
2. Supplemental Contribution Amortization by July 1, 2009 of UAAL of \$(132)	-0.21%	(\$7)
3. Allowance for Expenses	0.71%	\$23
	-----	-----
4. Total	8.98%	\$290
<b>C. CONTRIBUTION SUFFICIENCY (DEFICIENCY)</b>		
(A3-B4)	1.31%	\$42

Note: Projected Annual Payroll for Fiscal Year Beginning  
on July 1, 1985 is \$3,231



# DULUTH TEACHERS' RETIREMENT FUND

TABLE 12B  
NEW

## PROJECTED CASH FLOW JULY 1, 1985

<u>FISCAL YEAR</u>	<u>STATUTORY CONTRIBUTIONS</u>	<u>TRANSFERS FROM OLD PLAN</u>	<u>OTHER DISBURSEMENTS</u>	<u>INVESTMENT RETURN</u>	<u>CURRENT ASSETS YEAR END</u>
1985					\$4,992
1986	\$332	\$1,800	\$737	\$455	6,774
1987	552	340	766	547	7,372
1988	712	76	726	592	7,946
1989	877	72	705	645	8,747
1990	1,067	405	741	729	10,104
1991	1,318	397	785	846	11,762
1992	1,561	1,165	916	1,013	14,439
1993	1,876	2,351	1,165	1,278	18,591
1994	2,267	2,758	1,487	1,629	23,520
1995	2,636	2,306	1,775	2,008	28,408
1996	3,033	3,306	2,161	2,440	34,676
1997	3,534	5,298	2,758	3,017	43,330
1998	3,995	3,795	3,228	3,649	51,025
1999	4,536	4,395	3,743	4,290	59,898
2000	5,043	3,241	4,173	4,956	68,275
2001	5,606	5,331	4,837	5,706	79,281
2002	6,219	4,907	5,441	6,570	90,620
2003	6,900	7,749	6,334	7,582	105,452
2004	7,607	7,304	7,215	8,744	120,673
2005	8,394	6,737	8,092	9,935	136,271
2006	9,258	9,630	9,244	11,287	155,630
2007	10,281	13,195	10,806	12,957	179,444
2008	11,298	12,508	12,337	14,814	203,670
2009	12,320	9,163	13,602	16,609	225,878
2010	13,380	9,018	14,917	18,370	249,212

**DULUTH TEACHERS' RETIREMENT FUND****TABLE 14B  
NEW****SUMMARY OF PLAN PROVISIONS**

Eligibility	A teacher who is employed by the Board of Education of the City of Duluth. Also includes any employees of the Retirement Fund and certain part-time employees licensed by the state Board of Education. Employees in New Plan are those who joined on or after July 1, 1981 including any Old Plan Members who may elect to join any time prior to retirement.
Contributions	
Member	4.5% of Salary.
Employer	5.79% of Salary.
Allowable Service	Earned if the Member is employed in a covered position and employee contributions are deducted. May also include certain part-time service, extended leaves of absence, sabbatical leaves, and military service.
Salary	Total compensation. Excludes any lump sum annual leave or sick leave payments and lump sum payments at separation.
Average Salary	Average of the 5 highest successive years of Salary.
<b>RETIREMENT</b>	
<b>Normal Retirement Benefit</b>	
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.
Amount	1% of Average Salary for the first 10 years of Allowable Service and 1.5% of Average Salary for each subsequent year.
<b>Early Retirement Benefit</b>	
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 of 0.5% for each month the member is under age 65 at time of retirement (age 62 if 30 years of Allowable Service). The reduction factor of 0.5% is replaced by 0.25% for each month the member is under age 60.

TABLE 14B  
NEW  
(cont)

Form of Payment	Life annuity. Actuarially equivalent options are: 5, 10, 15, or 20 year certain and life 50% or 100% joint and survivor 50% or 100% bounce back joint and survivor (option is cancelled if Member is pre-deceased by beneficiary). Guaranteed refund A larger life annuity before age 62 and reduced thereafter.
Benefit Increases	If the investment income of the fund was at least 6% of the asset value of the fund at the end of the 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 previous 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 under age 65 and is age 50 or older with 5 years of Allowable Service or younger than age 50 with 10 years of Allowable Service. 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.  Payment may begin 90 days after disability and stops at age 65 or earlier if disability ceases or death occurs. Benefits paid while partially employed may be reduced.
Form of Payment	Same as for retirement.
Benefit Increases	Same as for retirement.
Retirement Benefits Eligibility	Age 65 if still totally and permanently disabled.
Amount	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.

**TABLE 14B**  
**NEW**  
**(cont)**

Benefit Increases      Same as for retirement.

**DEATH BENEFITS**

**Surviving Spouse Optional  
Annuity**

Eligibility      Member who dies before retirement benefits commence if age 55 with 20 years of Allowable Service or any age with 30 years of Allowable Service.

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 Member's Contri-  
butions With Interest**

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 BENEFITS**

**Refund of Member's Contri-  
butions**

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. Amount is payable as a normal or early retirement.

# DULUTH TEACHERS' RETIREMENT FUND

TABLE 15B  
NEW

## MEMBERSHIP CHANGES (DOLLARS IN THOUSANDS)

JUNE 30, 1985

		<u>NUMBER</u>	<u>PAYROLL</u>
A.	ACTIVE MEMBERS		
1.	As of the Last Valuation Date	142	\$1,379
2.	New Entrants	147	1,550
3.	Total	289	2,929
4.	Separations from Active Service		
a.	Refund of Contributions	(30)	(309)
b.	Separation with Deferred Annuity	(1)	(30)
c.	Separation with neither Refund nor Deferred Annuity	0	0
d.	Disability	0	0
e.	Death	0	0
f.	Retirement with Service Annuity	0	0
5.	Total Separations	(31)	(339)
6.	Data Adjustments	0	444
7.	As of Current Valuation Date	258	\$3,034
B.	SERVICE RETIREMENT ANNUITANTS	<u>NUMBER</u>	<u>ANNUAL ANNUITY</u>
1.	As of the Last Valuation Date	17	\$163
2.	New Entrants	30	424
3.	Total	47	587
4.	Terminations		
a.	Deaths	0	0
b.	Others	0	0
5.	Total Terminations	0	0
6.	Data Adjustments	1	(264)
7.	As of Current Valuation Date	48	\$323
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  
NEW  
(cont)

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