

**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Actuarial Valuation as of January 1, 1986

May 6, 1986

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**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Actuarial Valuation as of January 1, 1986

PURPOSE AND SUMMARY

The purpose of this report is to present the results of our January 1, 1986 actuarial valuation of the Bloomington Fire Department Relief Association performed in accordance with the provisions of Chapter 356 of the Minnesota State Statutes. In summary, our valuation indicates a required contribution of \$1,610,700 as of January 1, 1986. The contribution must be increased with interest, at the rate of 5% per annum until the date of payment. If payment is made as late as December 31, 1986, a contribution of \$1,691,200 is required. This contribution is in addition to estimated member contributions of \$18,100 for 1986. The results of the valuation are discussed in detail in later sections of the report.

EMPLOYEE DATA

The data provided by the Association is summarized in Table 2(a). The table sets forth a reconciliation from January 1, 1985 to January 1, 1986. There are 127 active members in the Association as of the valuation date. They have an average attained age of 38.3 and an average entry age of 27.7. Table 2(b) sets forth the prospective benefit each member may expect to receive if he remains in the Association to the normal retirement date assumed in the valuation, age 50 and completion of 20 years of service. These benefits assume 3½% future pay increases per year.

The reported data includes 31 retired members, 8 disabled members, 8 surviving spouses and 3 surviving children receiving monthly benefits as of January 1, 1986. There are 5 terminated members entitled to receive benefits at age 50.

Table 2(c) sets forth a listing showing the benefit each inactive member is currently receiving or is entitled to receive upon attainment of age 50. No increase is assumed in benefits of terminated vested members for this listing.

Monthly benefits payable from the plan are based on the most recent three year average salary rates of the highest paid non-officer policeman in the City of Bloomington. Consequently benefits to all inactive members are increased each year, the most recent, January 1, 1986 benefit levels being determined as follows:

1.	Average Monthly Salary	
	(a) January 1, 1984	2,538
	(b) January 1, 1985	2,665
	(c) January 1, 1986	2,789
	(d) Average	2,664
2.	Monthly Benefits	
	(a) Retirees	
	(1(d) x 1/3)	888
	(b) Surviving Spouses	
	(1(d) x 1/4)	666

For cost determinations, future benefits are assumed to increase in accordance with the assumed rate of salary increase, 3½% per year.

ASSETS OF THE SPECIAL FUND

A statement of the assets of the Special Fund as of December 31, 1985 prepared by George Hayden was made available to us by the Association. Our valuation reflects the reported market value of the Special Fund as of December 31, 1985 of \$20,567,189 less salaries and pensions of \$40,335 which were payable as of December 31, 1985 for a total of \$20,526,900 used as valuation assets.

PLAN PROVISIONS

Table 3 is a summary of the principal provisions of the plan. Although the principal provisions of the plan have not changed since the last valuation, benefits to retired members have increased 4.59% from \$849 to \$888 per month as a result of increases in the pay rate of the highest paid non-officer Bloomington policeman.

ACTUARIAL ASSUMPTIONS

Chapter 356 of the Minnesota Statutes requires that actuarial valuations of public plans be based on an assumed interest rate of 5% per annum and an assumed rate of annual salary increase of 3½% per annum. Other assumptions pertaining to the

rates of mortality, turnover, retirement, etc. are left to the discretion of the actuary. All of the valuation assumptions are the same as those used in the January 1, 1985 valuation of the plan. Table 4 is a summary of all of the actuarial assumptions.

ACTUARIAL METHOD

As required by law, the funding method used for the valuation is the entry age normal cost method. Under this method, the normal cost is computed as that percentage of pay which would fund all benefits if that percentage of pay was contributed every year from each fireman's entry into the plan until his retirement. The total normal cost for the plan is the sum of the normal costs for all active members. The normal cost is reduced by the members' contribution for the current year.

The present value of all future benefits payable from the plan for all active and inactive members less the present value of all future normal costs is defined as the accrued liability. The accrued liability is the amount that would have accumulated in the Special Fund if all the actuarial assumptions had been exactly realized in all prior years and if funding for all members, based on current plan benefits, had commenced immediately upon their date of joining the Association.

The total accrued liability is compared to the market value of the Special Fund to determine the status of the plan. Any difference, known as the unfunded accrued liability is to be funded with a payment over a number of years specified by law, known as the amortization payment. The unfunded accrued liability of the current plan must be paid over the 29 year period beginning on January 1, 1983 and ending on December 31, 2011. There are 26 years left in the amortization period. Any changes in the unfunded accrued liability due to changes in benefits or actuarial assumptions must be paid over a new 30 year period.

The total annual contribution due as of the valuation date is the sum of the normal cost, the amortization payment and a \$9,000 provision for administrative

expenses. The provision for expected expenses is necessary because all expenses are paid from the Special Fund. The \$9,000 amount is estimated from actual expenses paid from the Special Fund during 1985. Interest must be added to the contribution at the rate of 5% from the valuation date to the date of payment. Thus, if payment were made as of December 31, 1986, the January 1 contribution amount must be multiplied by 1.05.

VALUATION RESULTS

Table I sets forth the principal results of our valuation. A total contribution of \$1,691,200 is required. A contribution of \$1,739,200 was reported in the January 1, 1985 valuation. This contribution was expected to increase to \$1,778,600 as of January 1, 1986 because the normal cost is expected to increase 3½% each year in accordance with our valuation method.

The principal reason for the decrease of \$87,400 from the expected cost level is the decrease in the amortization payment because of investment experience of 17.6%, well in excess of our valuation assumption of 5%.

The annual contribution is the sum of the normal cost, the amortization payment, and administrative expenses. The normal cost is computed to be a level percentage of pay assuming each fireman earns the same as a Bloomington policeman, \$33,468 per year. Under this assumption, there is a total covered payroll of \$4,250,436 (127 x \$33,468) and the net normal cost of \$1,137,500 is 26.8% of payroll. The total contribution of \$1,691,200 is 39.8% of payroll.

CHANGE IN THE UNFUNDED ACCRUED LIABILITY

Chapter 356 requires a reconciliation of the unfunded accrued liability from one valuation to the next valuation. As of January 1, 1985 there was an unfunded accrued liability of \$9,119,400. As of January 1, 1986 there is an unfunded accrued liability of \$7,007,000. This decrease of \$2,112,400 is accountable as follows:

1.	Unfunded accrued liability as of January 1, 1985	9,119,400
2.	Decrease due to:	
	(a) Contributions 1985	332,600
	(b) Investment earnings in excess of those assumed	2,129,600
	(c) Total decrease	2,462,200
3.	Increase due to:	
	(a) Salary increases in excess of those assumed	298,200
	(b) Miscellaneous actuarial losses	51,600
	(c) Total increase	349,800
4.	Unfunded accrued liability as of January 1, 1986 (1 - 2.c + 3.c)	7,007,000

Investment earnings were 17.6% for 1985 versus our assumption of 5%. Salary increases were 4.7% for 1985 versus our assumption of 3.5%. Because the excess investment earnings were much greater than the excess salary increases, the required contribution has decreased.

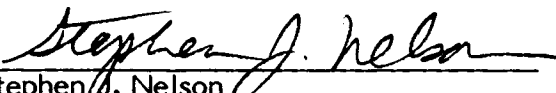
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If you have any questions, please let us know. We would be happy to meet with you to discuss further the results of our valuation.

Respectfully submitted,

THE WYATT COMPANY


Victoria A. Suchsland
Fellow, Society of Actuaries


Stephen J. Nelson
Associate, Society of Actuaries

sh
Minneapolis/St. Paul

May 6, 1986

Table I

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1986

A. BASIC VALUATION RESULTS

1.	Accrued liability	
	a. Active members	15,819,700
	b. Inactive members	
	i. Retired members	6,735,700
	ii. Disabled members	2,503,400
	iii. Surviving spouse	972,600
	iv. Surviving children	87,900
	v. Terminated members entitled to deferred benefits	1,414,600
	vi. Total	11,714,200
	c. Total accrued liability	27,533,900
2.	Market value of special fund as of January 1, 1986	20,526,900
3.	Unfunded accrued liability (1 - 2)	7,007,000
4.	Annual normal cost	
	a. Total	1,155,600
	b. Estimated member contributions	18,100
	c. Net normal cost	1,137,500

B. ANNUAL CONTRIBUTION

1.	Payable as of January 1, 1986	
	a. Normal cost	1,137,500
	b. Amortization payment for unfunded accrued liability	464,200
	c. Administrative expenses	9,000
	d. Total	1,610,700
2.	Payable as of December 31, 1986 (1.d x 1.05)	1,691,200

Table 2(a)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1986

A. ACTIVE MEMBERS

1.	January 1, 1985	119
2.	New Entrants	10
3.	Separations	
	(a) Vested terminations	0
	(b) Non-vested terminations	1
	(c) Disabilities	1
	(d) Deaths	0
	(e) Retirements	0
	(f) Total separations	2
4.	January 1, 1986	127

B. RETIRED MEMBERS

1.	January 1, 1985	32
2.	New Retirees	0
3.	Transfers from deferred vested status	0
4.	Deaths	1
5.	January 1, 1986	31

C. SURVIVING SPOUSES

1.	January 1, 1985	7
2.	New Beneficiaries	1
3.	Deaths	0
4.	Remarriage	0
5.	January 1, 1986	8

Table 2(a)
(Cont.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1986

D.	<u>DISABLED MEMBERS</u>	
1.	January 1, 1985	7
2.	New Disabilities	1
3.	Deaths	0
4.	Recoveries	0
5.	January 1, 1986	8
E.	<u>SURVIVING CHILDREN</u>	
1.	January 1, 1985	4
2.	New Recipients	0
3.	Benefits Expired	1
4.	January 1, 1986	3
F.	<u>DEFERRED VESTED MEMBERS</u>	
1.	January 1, 1985	5
2.	New Vested Terminations	0
3.	Transferred to Retiree Status	0
4.	January 1, 1986	5

Table 2(b)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1986

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
S ACELMANN	12/56	04/83	22207
W AHMAN	09/53	05/78	19353
B ANDERSON	06/43	04/70	13719
L ANDERSON	05/41	10/69	12807
L ANDERSON	02/48	11/77	16294
M ANCONI	04/58	03/85	22985
B ASKE	12/56	10/83	22207
B BARBER	09/64	03/85	28254
J BARNES	01/53	09/79	19353
L BERGQUIST	11/42	11/77	15743
S BLODGETTS	10/43	07/78	16294
R BCESER	05/38	09/67	11551
B BCNDURANT	12/47	03/81	18060
R BCRST	06/42	04/73	13719
C CARLSON	05/42	11/66	13256
G CHAPLIN	06/42	09/00	13250
E CHRISTIAN	05/39	12/64	11956
D CRLIKSHANK	03/44	11/72	14200
D DELONG	07/54	03/85	20731
C DCCDS	04/34	10/68	11551
B DCONNELLY	08/64	05/85	28254
M DCYLE	03/49	06/82	18698
J DUERKOP	01/53	04/83	19353
G DUGAL	01/48	08/79	16865
B DUNHAM	03/55	07/80	20731
C DVCRAK	10/46	11/73	15211
D ELFTMANN	03/36	10/67	11121
D ELLINGS	08/59	03/82	23789
C ENGBERG	07/40	02/69	12374
R FALK	09/46	02/71	15211
P FERRY	05/48	02/83	19353
I FINN	08/37	01/66	11121
J FINNEGAN	10/45	05/79	16865

Table 2(b)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1986

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
N FISCHER	10/42	04/60	13256
M FREEMARK	11/35	10/70	12374
F FLECKER	10/41	08/68	12807
R GABRIEL	06/41	01/64	12807
J GALE	09/53	11/75	19353
J GASTERLAND	06/45	05/68	14697
C GERDES	12/48	06/74	16865
J GJEVKE	10/31	02/66	10656
T GLSTAFSON	10/48	12/75	16294
C GUTH	09/55	11/80	20731
G HAEG	08/54	04/75	20030
J HAEG	01/36	12/66	11121
J HARRINGER	01/44	10/69	14200
L HAUGAN	08/52	03/77	18698
G HAYDEN	09/45	03/66	14697
K HECHT	10/42	10/74	14200
W HECHT	12/52	10/71	19353
D HEDIN	10/54	12/74	20030
F HEGEK	10/53	12/74	19353
P HLEER	03/42	04/70	13256
A HLNDR	06/57	05/81	22207
M HLRLEY	03/52	02/80	18698
W JEFFERS	11/47	04/81	18066
G JESSEN	05/48	03/75	16294
B JCHNSCN	11/59	06/81	23789
R JCHNSCN	07/51	05/77	18066
J JLDY	10/46	04/81	18066
K KAISER	06/54	08/80	20030
B KALINA	10/49	01/75	16865
W KALINA	02/43	01/75	14697
P KELLER	05/44	02/76	15211
W KETTLERKAMP	02/36	01/70	12374
R KIMBLER	07/38	08/66	11551

Table 2(b)
(Cont.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1986

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
G KRISTJANSC	01/41	08/70	12807
H LANENBERG	07/36	09/67	11121
S LEEDER	10/51	10/80	18066
W LEMBECK	10/41	04/71	12807
M LCISELLE	08/48	10/71	16294
S MALONEY	01/60	10/81	24622
T MANSKE	07/43	11/70	13719
C MARTENSON	09/34	11/68	11551
D MATTSON	12/39	01/66	12374
G MELCNY	06/45	11/72	14697
S MINION	06/39	02/67	11956
R MCCRE	04/63	11/83	27298
C NAPIER	02/41	08/67	12807
D NICHOLS	03/39	08/67	11956
D NIEMI	05/60	04/83	24622
J NCRDSKCG	01/57	09/78	22207
B OCONNOR	07/64	03/85	28254
R OLSON	07/54	01/79	20030
W PAGET	06/39	07/83	19353
K PAHL	06/48	08/68	16294
E PALMSTEN	07/48	02/83	19353
C PETERSON	03/40	02/68	12374
R PETERSON	03/43	08/75	14697
T PRESSLER	09/35	09/70	12374
J REILY	08/50	07/85	20731
S REINHARDT	12/42	02/85	20731
C REYNOLDS	08/63	11/83	27298
J REZAC	11/61	12/82	25483
R RCASE	09/57	02/85	22207
W RCASE	12/58	12/83	23789
K ROBERTS	03/47	01/72	15743
R RCEHL	04/52	09/76	18698
M RCUEN	12/41	09/72	13256

Table 2(b)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1986

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
D SCHMELZ	10/55	01/83	20731
R SCHOENBERG	07/40	02/71	12807
L SEAL	10/57	06/76	22207
G SELINSKY	09/41	06/72	13256
C SHEFLET	02/42	02/69	13256
G SHIELDS	01/47	10/81	18066
D SMITH	04/47	02/81	18066
R SMITH	05/52	06/78	18698
W SNYDER	04/38	01/70	12374
M STERN	01/43	05/72	13719
W SUTCLIFFE	02/59	02/62	23789
B SVEUM	01/52	06/73	18698
A SVOBODNY	07/55	04/83	20731
E SWEIVEN	09/35	09/70	12374
J THOMA	05/40	04/65	12374
D TRAVERS	10/39	10/67	11956
R TROUSDALE	08/52	05/83	19353
L TSCHIMPERL	04/37	01/67	11121
D TSCHIMPERLE	01/65	04/85	29243
M VOBER	01/44	02/71	14200
C WALKER	12/46	06/74	15743
R WAMSLEY	08/59	08/85	23789
E WARD	09/62	06/83	26375
E WENSHAL	08/37	09/71	12807
C WILLIAMS	03/43	04/74	14200
C WILSON	06/37	01/66	11121
G WILSON	11/42	04/68	13256
L WISE	03/36	06/68	11551

Table 2(c)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1986

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
B ANDERSON	RETIRED	888
R ANDERSON	RETIRED	888
J BRENING	DEFERRED	888
L CHADWICK	WIDOW	600
C CHRISTENSEN	WIDOW	666
D CIARDELLI	RETIRED	888
R CLEMENSEN	RETIRED	888
J COLEHOUR	DISABLED	880
G COUSETTE	RETIRED	888
J ELLRICH	WIDOW	666
R ELM	RETIRED	888
J ENGBERG	RETIRED	888
R ENGLAND	RETIRED	888
W FABER	DISABLED	888
A FRIENDSHUP	RETIRED	885
A FURULI	RETIRED	888
N GABRIEL	RETIRED	888
G GERHARDT	DISABLED	888
P GOETTSCHE	CHILD	600
W HAEG	RETIRED	888
F HALL	RETIRED	888
D HANSON	DISABLED	888
C HECHT	RETIRED	888
C HEDIN	RETIRED	888
R HEDIN	RETIRED	888
K HEGER	RETIRED	888
B MCAGLUND	WIDOW	600
R JUSTEN	DISABLED	888
M KAISER	RETIRED	888
E KEITH	RETIRED	888
C KELLEY	RETIRED	888
C LUND	WIDOW	666
R MACALLISTER	DISABLED	888

Table 2(c)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1986

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
R MCDONALD	RETIRED	888
R MCKENZIE	RETIRED	888
J MCWILLIAMS	DEFERRED	888
G MILLER	RETIRED	888
W MCLEEN	DEFERRED	888
D OLSON	DISABLED	888
M PAHL	RETIRED	888
E PETERSEN	RETIRED	888
D PETERSON	RETIRED	888
S PETERSON	DEFERRED	888
M RUEGER	WIDOW	666
J SAVAGE	RETIRED	888
R SAVAGE	RETIRED	888
V SEGERSTROM	RETIRED	888
B SMITH	RETIRED	888
R SWANSON	DISABLED	888
F THOMA	WIDOW	666
R THOMA	DEFERRED	888
A WELTER	RETIRED	888
M ZICHERT	WIDOW	666

Table 3

BLOOMINGTON FIRE DEPARTMENT RELIEF ASSOCIATION

Summary of Current Plan Provisions

1. **Basic Benefit:** One-third of the final average salary of a policeman of the highest grade, not including officers of the City of Bloomington. Final average earnings is the average of the monthly pay for such a policeman over the past three years. All benefits under the plan increase each time a pay increase is granted to the Bloomington Police Department.
2. **Normal Retirement Benefit:** Basic benefit is payable at retirement after attainment of age 50 and completion of 20 years of service.
3. **Deferred Vested Benefits:** On termination after completion of 20 years of service, the basic benefit is payable after attainment of age 50.
4. **Disability Benefits:** The basic benefit is payable while the member remains disabled. After attainment of age 50, a normal retirement benefit is payable. Disability is defined as inability to perform the duties of a fireman.
5. **Spouse's Benefit:** On the death of any active or inactive member, 75% of the basic benefit is payable to the surviving spouse for her remaining lifetime. Benefits cease on remarriage of the surviving spouse.
6. **Children's Benefit:** On the death of an active member, 12% of the basic benefit is payable to each surviving child until attainment of age 18. Maximum family benefit is 100% of the basic benefit. On the remarriage or death of a widow, surviving children may receive benefits which in total equal no more than the basic benefit.
7. **Lump Sum Death Benefit:** On the death of any active or inactive member \$500 is payable.
8. **Membership Dues:** Each member contributes \$144.00 per year payable semi-annually on January 1 and July 1.

Table 4

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Actuarial Method and Assumptions

1. Interest Rate: 5% per annum.
2. Mortality: The mortality rates used are based on the 1971 Group Annuity Mortality Table, without margins, projected to 1976 by Scale E. The table is used for all rates of mortality.
3. Withdrawal: The rate of withdrawal is .030 at age 20 decreasing uniformly to zero at age 50 with no withdrawal after that age.
4. Disability: The Railroad Retirement Board 12th Valuation rates of disablement loaded for the nature of the group.
5. Retirement Age: Members are assumed to retire after attaining age 50 and completing 20 years of service.
6. Salary Scale: 3½% per annum.
7. Valuation Assets: Market value.
8. Funding Method: The entry age normal cost method has been used with the normal cost determined as a level of percentage of pay each year from the date of joining the Association to the assumed retirement age. Each fireman is assumed to earn the same as a Bloomington policeman.