

**BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION**

**Actuarial Valuation as of January 1, 1987**

**March 26, 1987**

 **FILE COPY**

## TABLE OF CONTENTS

	<u>PAGE</u>
PURPOSE AND SUMMARY	1
EMPLOYEE DATA	1
ASSETS OF THE SPECIAL FUND	2
PLAN PROVISIONS	2
ACTUARIAL ASSUMPTIONS	3
ACTUARIAL METHOD	3
VALUATION RESULTS	4
CHANGE IN UNFUNDED ACCRUED LIABILITY	5

## TABLES

Table 1	Results of Actuarial Valuation as of January 1, 1987	7
Table 2(a)	Summary of Membership as of January 1, 1987	8
Table 2(b)	Projected Benefits for Active Members as of January 1, 1987	10
Table 2(c)	Monthly Benefits for Inactive Members as of January 1, 1987	14
Table 3	Summary of Current Plan Provisions	16
Table 4	Actuarial Method and Assumptions	17

**BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION**

**Actuarial Valuation as of January 1, 1987**

**PURPOSE AND SUMMARY**

The purpose of this report is to present the results of our January 1, 1987 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 \$1,586,500 as of January 1, 1987. 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, 1987, a contribution of \$1,665,800 is required. This contribution is in addition to estimated member contributions of \$17,600 for 1987. The results of the valuation are discussed in detail in later sections of the report.

We certify that this actuarial valuation has been prepared in accordance with Chapter 356 of the Minnesota State Statutes as it applies to the Bloomington Fire Department Relief Association.

**EMPLOYEE DATA**

The data provided by the Association is summarized in Table 2(a). The table sets forth a reconciliation from January 1, 1986 to January 1, 1987. There are 124 active members in the Association as of the valuation date. They have an average attained age of 37.5 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 38 retired members, 6 disabled members, 8 surviving spouses and 3 surviving children receiving monthly benefits as of January 1, 1987. There are 14 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, 1987 benefit levels being determined as follows:

1.	Average Monthly Salary	
	(a) January 1, 1985	2,665
	(b) January 1, 1986	2,789
	(c) January 1, 1987	2,896
	(d) Average	2,783
2.	Monthly Benefits	
	(a) Retirees	
	(1(d) x 1/3)	927
	(b) Surviving Spouses	
	(1(d) x 1/4)	695

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, 1986 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, 1986 of \$24,197,586 less salaries and pensions of \$44,845 which were payable as of December 31, 1986 for a total of \$24,152,700 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 4.39% from \$888 to \$927 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, 1986 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 25 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 \$7,400 provision for administrative expenses. The provision for expected expenses is necessary because all expenses are paid from the Special Fund. The \$7,400 amount is estimated from actual expenses paid from the Special Fund during 1986. 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, 1987, 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 \$1,665,800 is required. A contribution of \$1,691,200 was reported in the January 1, 1986 valuation. This contribution was expected to increase to \$1,733,700 as of January 1, 1987 because the normal cost is expected to increase 3½% each year in accordance with our valuation method.

The principal reason for the decrease of \$67,900 from the expected cost level is the decrease in the amortization payment because of investment experience of 10.1%, 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, \$34,752 per year. Under this assumption, there is a total covered payroll of \$4,309,248 (124 x \$34,752) and the net normal cost of \$1,151,000 is 26.7% of payroll. The total contribution of \$1,665,800 is 38.7% 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, 1986 there was an unfunded accrued liability of \$7,007,000. As of January 1, 1987 there is an unfunded accrued liability of \$6,335,200. This decrease of \$671,800 is accountable as follows:

1.	Unfunded accrued liability as of January 1, 1986	7,007,000
2.	Decrease due to:	
	(a) Contributions 1986	488,100
	(b) Investment earnings in excess of those assumed	1,082,000
	(c) Total decrease	1,570,100
3.	Increase due to:	
	(a) Salary increases in excess of those assumed	183,100
	(b) Miscellaneous actuarial losses	715,200
	(c) Total increase	898,300
4.	Unfunded accrued liability as of January 1, 1987 (1 - 2.c + 3.c)	6,335,200


Investment earnings were 10.1% for 1986 versus our assumption of 5%. Salary increases were 3.8% for 1986 versus our assumption of 3.5%. The miscellaneous actuarial losses represent the data changes during the year - 13 new active members, 2 more retirees, 1 more disabled member and 11 additional vested terminations. Because the excess investment earnings were much greater than the actuarial losses, the required contribution has decreased.

\* \* \* \* \*

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. Slomany  
Fellow, Society of Actuaries

sh  
Minneapolis/St. Paul

March 26, 1987



Table I

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1987

A. BASIC VALUATION RESULTS

1.	Accrued liability	
	a. Active members	14,576,300
	b. Inactive members	
	i. Retired members	8,870,500
	ii. Disabled members	2,020,500
	iii. Surviving spouses	980,000
	iv. Surviving children	63,500
	v. Terminated members entitled to deferred benefits	3,977,100
	vi. Total	15,911,600
	c. Total accrued liability	30,487,900
2.	Market value of special fund as of January 1, 1987	24,152,700
3.	Unfunded accrued liability (1 - 2)	6,335,200
4.	Annual normal cost	
	a. Total	1,168,600
	b. Estimated member contributions	17,600
	c. Net normal cost	1,151,000

B. ANNUAL CONTRIBUTION

1.	Payable as of January 1, 1987	
	a. Normal cost	1,151,000
	b. Amortization payment for unfunded accrued liability	428,100
	c. Administrative expenses	7,400
	d. Total	1,586,500
2.	Payable as of December 31, 1987 (1.d x 1.05)	1,665,800

Table 2(a)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1987

A. ACTIVE MEMBERS

1.	January 1, 1986	127
2.	New Entrants	13
3.	Separations	
	(a) Vested terminations	11
	(b) Non-vested terminations	2
	(c) Disabilities	1
	(d) Deaths	0
	(e) Retirements	2
	(f) Total separations	16
4.	January 1, 1987	124

B. RETIRED MEMBERS

1.	January 1, 1986	31
2.	New Retirees	2
3.	Transfers from deferred vested status	2
4.	Transfers from disabled status	3
5.	Deaths	0
6.	January 1, 1987	38

C. SURVIVING SPOUSES

1.	January 1, 1986	8
2.	New Beneficiaries	0
3.	Deaths	0
4.	Remarriage	0
5.	January 1, 1987	8

Table 2(a)  
(Con't.)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1987

D. DISABLED MEMBERS

1.	January 1, 1986	8
2.	New Disabilities	1
3.	Deaths	0
4.	Recoveries	0
5.	Transferred to Retiree Status	3
6.	January 1, 1987	6

E. SURVIVING CHILDREN

1.	January 1, 1986	3
2.	New Recipients	0
3.	Benefits Expired	0
4.	January 1, 1987	3

F. DEFERRED VESTED MEMBERS

1.	January 1, 1986	5
2.	New Vested Terminations	11
3.	Transferred to Retiree Status	2
4.	January 1, 1987	14

Table 2(b)

**BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION**

**Projected Benefits for Active Members as of January 1, 1987**

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
S ADELMANN	12/56	04/83	22280
W AHMAN	09/53	05/78	19415
B ANDERSON	06/43	04/70	13764
L ANDERSON	05/41	10/69	12849
L ANDERSON	02/48	11/77	16347
M ANNONI	04/58	03/85	23059
T ARBUCKLE	02/60	01/84	24702
B ASKE	12/56	10/83	22280
B BARBER	09/64	03/85	28346
J BARNES	01/53	09/79	19415
L BERGQUIST	11/42	11/77	15795
S BLODGETTS	10/43	07/78	16347
R BOESER	05/38	09/67	11576
R BORST	06/42	04/73	13764
P COLLINS	04/54	12/84	20798
D CRUIKSHANK	03/44	11/72	14246
D DELONG	07/54	03/85	20798
D DODDS	04/34	10/68	11576
B DONNELLY	08/64	05/85	28346
M DOYLE	03/49	06/82	18759
J DUERKOP	01/53	04/83	19415
G DUGAL	01/48	08/79	16919
B DUNHAM	03/55	07/80	20798
D DVORAK	10/46	11/73	15260
D ELFTMANN	03/36	10/67	11133
D ELLINGS	08/59	03/82	23866
D ENGBERG	07/40	02/69	12414
R FALK	09/46	02/71	15260
P FERRY	05/48	02/83	19415
J FINNEGAN	10/45	05/79	16919
M FREEMARK	11/35	10/70	12414
F FUECKER	10/41	08/68	12849
J GALE	09/53	11/75	19415

Table 2(b)  
(Cont.)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1987

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
J GASTERLAND	06/45	05/68	14744
C GERDES	12/48	06/74	16919
T GUSTAFSON	10/48	12/75	16347
C GUTH	09/55	11/80	20798
G HAEG	08/54	04/75	20095
J HARRINGER	01/44	10/69	14246
L HAUGAN	08/52	03/77	18759
K HECHT	10/42	10/74	14246
W HECHT	12/52	10/71	19415
D HEDIN	10/54	12/74	20095
P HEGER	10/53	12/74	19415
P HUBER	03/42	04/70	13299
A HUNDT	06/57	05/81	22280
M HURLEY	03/52	02/80	18759
W JEFFERS	11/47	04/81	18125
G JESSEN	05/48	03/75	16347
B JCHNSON	11/59	06/81	23866
R JCHNSON	07/51	05/77	18125
W JOHNSON	04/58	08/82	23059
J JUDY	10/46	04/81	18125
K KAISER	06/54	08/80	20095
B KALINA	10/49	01/75	16919
W KALINA	02/43	01/75	14744
P KELLER	05/44	02/76	15260
W KETTLEKAMP	02/36	01/70	12414
G KRISTJANSO	01/41	08/70	12849
H LANENBERG	07/36	09/67	11133
J LANNENBERG	04/66	07/84	30365
B LARSON	09/52	08/84	20095
S LEEDER	10/51	10/80	18125
W LEMBECK	10/41	04/71	12849
M LOISELLE	08/48	10/71	16347
A MAJERUS	03/61	05/84	25566

Table 2(b)  
(Con't.)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1987

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
S MALONEY	01/60	10/81	24702
D MANSKE	10/48	01/78	16347
T MANSKE	07/43	11/70	13764
D MARTENSON	09/34	11/68	11576
K MCDEVITT	04/53	12/84	20798
G MELONY	06/45	11/72	14744
S MINION	06/39	02/67	11995
R MOORE	04/63	11/83	27387
D NAPIER	08/41	08/67	12849
J NORDSKOG	01/57	09/78	22280
B OCONNOR	07/64	03/85	28346
B OLSON	05/57	11/84	22280
R OLSON	07/54	01/79	20095
W PAGET	06/39	07/83	19415
K PAHL	06/48	08/68	16347
E PALMSTEN	07/48	02/83	19415
D PEARSON	10/48	01/85	20798
D PETERSON	03/40	02/68	12414
R PETERSON	03/43	08/75	14744
T PRESSLER	09/35	09/70	12414
J REILY	08/50	07/85	20798
S REINHARDT	12/48	02/85	20798
C REYNOLDS	08/63	11/83	27387
J REZAC	11/61	12/82	25566
R ROASE	09/57	02/85	22280
W ROASE	12/58	12/83	23866
K ROBERTS	03/47	01/72	15795
R ROEHL	04/52	09/78	18759
M ROUEN	12/41	09/72	13299
D SCHMELZ	10/55	01/83	20798
R SCHOENBORN	07/40	02/71	12849
U SEAL	10/57	06/76	22280
G SELINSKY	09/41	06/72	13299

Table 2(b)  
(Con't.)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1987

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
R SHAW	04/54	02/84	20095
D SHEFLET	02/42	02/69	13299
G SHIELDS	01/47	10/81	18125
D SMITH	04/47	02/81	18125
R SMITH	05/52	06/78	18759
W SNYDER	04/38	01/70	12414
M STERN	01/43	05/72	13764
W SUTCLIFFE	02/59	02/82	23866
B SVEUM	01/52	06/73	18759
A SVOBODNY	07/55	04/83	20798
E SWEIVEN	09/35	09/70	12414
D TRAVERS	10/39	10/67	11995
R TROUSDALE	08/52	05/83	19415
L TSCHIMPERL	04/37	01/67	11133
D TSCHIMPERLE	01/65	04/85	29338
K TSCHIMPERLE	12/65	06/84	30365
J TUMBERG	03/64	11/84	28346
M VOBER	01/44	02/71	14246
D WALKER	12/46	06/74	15795
R WAMSLEY	08/59	08/85	23866
B WARD	09/62	06/83	26461
E WENSHAU	08/37	09/71	12849
C WILLIAMS	03/43	04/74	14246
G WILSON	11/42	04/68	13299
L WISE	03/36	06/68	11576

Table 2(c)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1987

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
B ANDERSON	RETIRED	927
R ANDERSON	RETIRED	927
J BRENING	RETIRED	927
D CARLSON	DEFERRED	927
L CHADWICK	WIDOW	695
G CHAPLIN	DEFERRED	927
C CHRISTENSEN	WIDOW	695
E CHRISTIAN	DEFERRED	927
D CIARDELLI	RETIRED	927
R CLEMENSEN	RETIRED	927
J COLEHOUR	DISABLED	927
G DCUSETTE	RETIRED	927
J ELLRICH	WIDOW	695
R ELM	RETIRED	927
J ENGBERG	RETIRED	927
R ENGLAND	RETIRED	927
W FABER	RETIRED	927
I FINN	DEFERRED	927
N FISCHER	DEFERRED	927
A FRIENDSHUH	RETIRED	927
A FURULI	RETIRED	927
N GABRIEL	RETIRED	927
R GABRIEL	DEFERRED	927
G GERHARDT	DISABLED	927
J GJEVRE	RETIRED	927
P GOETTSCHE	CHILD	521
J HAEG	RETIRED	927
W HAEG	RETIRED	927
P HALL	RETIRED	927
D HANSON	DISABLED	927
G HAYDEN	DEFERRED	927
C HECHT	RETIRED	927
C HEDIN	RETIRED	927



Table 2(c)  
(Con't.)

BLOOMINGTON FIRE DEPARTMENT  
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1987

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
R HEDIN	RETIRED	927
K HEGER	RETIRED	927
B HOAGLUND	WIDOW	695
R JUSTEN	RETIRED	927
M KAISER	RETIRED	927
E KEITH	RETIRED	927
C KELLEY	RETIRED	927
R KIMBLER	DEFERRED	927
O LUND	WIDOW	695
R MACALLISTER	DISABLED	927
D MATTSON	DEFERRED	927
R MCDONALD	RETIRED	927
R MCKENZIE	RETIRED	927
J MCWILLIAMS	DEFERRED	927
G MILLER	RETIRED	927
D NICHOLS	DISABLED	927
W NOLEEN	DEFERRED	927
D OLSON	DISABLED	927
M PAHL	RETIRED	927
E PETERSEN	RETIRED	927
D PETERSON	RETIRED	927
S PETERSON	RETIRED	927
M RUEGER	WIDOW	695
J SAVAGE	RETIRED	927
R SAVAGE	RETIRED	927
V SEGERSTROM	RETIRED	927
B SMITH	RETIRED	927
R SWANSON	RETIRED	927
J THCMA	DEFERRED	927
R THCMA	DEFERRED	927
F TMCMA	WIDOW	695
A WELTER	RETIRED	927
C WILSON	DEFERRED	927
M ZOCHERT	WIDOW	695

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.