

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Actuarial Valuation as of January 1, 1984

March 9, 1984

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**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Actuarial Valuation as of January 1, 1984

PURPOSE AND SUMMARY

The purpose of this report is to present the results of our January 1, 1984 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 \$1,691,100 as of January 1, 1984. The contribution must be increased with interest, at the rate of 5% per annum until date of payment. If payment is made as late as December 31, 1984, a contribution of \$1,775,700 is required. This contribution is in addition to estimated member contributions of \$17,800 for 1984. 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, 1983 to January 1, 1984. There are 125 active members in the Association as of the valuation date. They have an average attained age of 37.1 and an average entry age of 27.9. 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 32 retired members, 6 disabled members, 7 surviving spouses and 4 surviving children receiving monthly benefits as of January 1, 1984. 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, 1984 benefit levels being determined as follows:

1.	Average Monthly Salary	
	(a) January 1, 1982	2,318
	(b) January 1, 1983	2,435
	(c) January 1, 1984	2,538
	(d) Average	2,430
2.	Monthly Benefits	
	(a) Retirees	
	(I(d) x 1/3)	810
	(b) Surviving Spouses	
	(I(d) x 1/4)	607

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, 1983 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, 1983 of \$13,375,397 less salaries and pensions of \$34,341 which were payable as of December 31, 1983 for a total of \$13,341,100 used as valuation assets. *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 6.02% from \$764 to \$810 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, 1983 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 28 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 \$8,800 provision for administrative expenses. The \$8,800 provision for expected expenses is necessary because all expenses are paid from the Special Fund. The \$8,800 amount is estimated from actual expenses paid from the Special Fund during 1983. 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, 1984, 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 \$1,775,700 is required. A contribution of \$1,648,500 was reported in the January 1, 1983 valuation. This contribution was expected to increase to \$1,683,600 as of January 1, 1984 because the normal cost is expected to increase 3½% each year in accordance with our valuation method.

The principal reason for the additional increase of \$92,100 in the total cost is the increase in the normal cost because of the increases in the Bloomington policeman's pay of 4.23% over the year versus our assumption of a 3.50% increase over the period. The amortization payment portion of the contribution did not increase because favorable investment experience offset the increase in the unfunded accrued liability because of the salary increases.

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, \$30,456 per year. Under this assumption, there is a total covered payroll of \$3,807,000 (125 x \$30,456) and the net normal cost of \$1,068,500 is 28.1% of payroll. The total contribution of \$1,775,700 is 46.6% of payroll.

*Covered
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, 1983 there was an unfunded accrued liability of \$9,827,300. As of January 1, 1984 there is an unfunded accrued liability of \$9,602,000. This decrease of \$225,300 is accountable as follows:

1.	Unfunded accrued liability as of January 1, 1983	9,827,300
2.	Decrease due to:	
	(a) Contributions 1983	(45,100)
	(b) Investment earnings in excess of those assumed	537,600
	(c) Other miscellaneous actuarial gains	422,300
	(d) Total decrease	914,800
3.	Increase due to:	
	(a) Salary increases in excess of those assumed	689,500
4.	Unfunded accrued liability as of January 1, 1984 (1 - 2.d + 3.a)	9,602,000


Investment earnings were 9.6% for 1983 versus our assumption of 5%. Salary increases were 4.23% for 1983 versus our assumption of 3.5%.

* * * * *

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

VAS/pak
Minneapolis/St. Paul

Table I

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Results of Actuarial Valuation as of January 1, 1984

A. BASIC VALUATION RESULTS

1. Accrued liability

a. Active members	12,374,200
b. Inactive members	
i. Retired members	6,730,900
ii. Disabled members	1,722,000
iii. Surviving spouse	772,700
iv. Surviving children	92,100
v. Terminated members entitled to deferred benefits	1,251,200
vi. Total	10,568,900
c. Total accrued liability	22,943,100

Actives = 9,317,700
Deferreds =

2. Market value of special fund as of January 1, 1984	13,341,100
3. Unfunded accrued liability (1 - 2)	9,602,000
4. Annual normal cost	
a. Total	1,086,300
b. Estimated member contributions	17,800
c. Net normal cost	1,068,500

ALL
98

B. ANNUAL CONTRIBUTION

1. Payable as of January 1, 1984	
a. Normal cost	1,068,500
b. Amortization payment for unfunded accrued liability	613,800
c. Administrative expenses	8,800
d. Total	1,691,100
2. Payable as of December 31, 1984 (1.d x 1.05)	1,775,700

Table 2(a)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1984

A. ACTIVE MEMBERS

1.	January 1, 1983	120
2.	New Entrants	17
3.	Separations	
	(a) Vested terminations	5
	(b) Non-vested terminations	4
	(c) Disabilities	2
	(d) Deaths	0
	(e) Retirements	1
	(f) Total separations	12
4.	January 1, 1984	125

B. RETIRED MEMBERS

1.	January 1, 1983	31
2.	New Retirees	1
3.	Transfers from deferred vested status	0
4.	Deaths	0
5.	January 1, 1984	32

C. SURVIVING SPOUSES

1.	January 1, 1983	8
2.	New Beneficiaries	0
3.	Deaths	0
4.	Remarriage	1
5.	January 1, 1984	7

Table 2(a)
(Continued)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Summary of Membership as of January 1, 1984

D. DISABLED MEMBERS

1.	January 1, 1983	4
2.	New Disabilities	2
3.	Deaths	0
4.	Recoveries	0
5.	January 1, 1984	6

E. SURVIVING CHILDREN

1.	January 1, 1983	4
2.	New Recipients	0
3.	Benefits Expired	0
4.	January 1, 1984	4

F. DEFERRED VESTED MEMBERS

1.	January 1, 1983	0
2.	New Vested Terminations	5
3.	Transferred to Retiree Status	0
4.	January 1, 1984	5

Table 2(b)

**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Projected Benefits for Active Members as of January 1, 1984

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
S ADELMANN	12/56	04/83	21648
W AHMAN	09/53	05/78	18865
B ANDERSON	06/43	04/70	13374
L ANDERSON	05/41	10/69	12485
L ANDERSON	02/48	11/77	15884
B ASKE	12/56	10/83	21648
J BARNES	01/53	09/79	18865
L BERGQUIST	11/42	11/77	15347
S BLODGETTS	10/43	07/78	15884
R BOESER	05/38	09/67	11261
B BONDURANT	12/47	03/81	17611
R BORST	06/42	04/73	13374
D CARLSON	05/42	11/66	12922
S CARR	06/48	03/83	18865
G CHAPLIN	06/42	09/66	12922
E CHRISTIAN	05/39	12/64	11655
J COLEHOUR	11/46	03/79	16440
D CRUIKSHANK	03/44	11/72	13842
D DODDS	04/34	10/68	11261
J DUERKOP	01/53	04/83	18865
G DUGAL	01/48	08/79	16440
B DUNHAM	03/55	07/80	20209
D DVORAK	10/46	11/73	14828
D ELFTMANN	03/36	10/67	10880
D ELLINGS	08/59	03/82	23190
D ENGBERG	07/40	02/69	12063
R FALK	09/46	02/71	14828
P FERRY	05/48	02/83	18865
I FINN	08/37	01/66	10880
J FINNEGAN	10/45	05/79	16440
N FISCHER	10/42	04/66	12922
M FREEMARK	11/35	10/70	12063
F FUECKER	10/41	08/68	12485
R GABRIEL	06/41	01/64	12485
J GALE	09/53	11/75	18865
J GASTERLAND	06/45	05/68	14326
C GERDES	12/48	06/74	16440
G GERHARDT	06/42	11/75	14326
J GJEVRE	10/31	02/66	10512
C GJØGENBERG	10/49	05/82	18227
F GUSTAFSON	10/48	12/75	15884
C GUTH	09/55	11/80	20209

Table 2(b)
(Cont.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1984

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
G HAEG	08/54	04/75	19525
J HAEG	01/36	12/66	10880
J HARRINGER	01/44	10/69	13842
L HAUGAN	08/52	03/77	18227
G HAYDEN	09/45	03/66	14326
S HAZEL	06/57	11/83	21648
K HECHT	10/42	10/74	13842
W HECHT	12/52	10/71	18865
D HEDIN	10/54	12/74	19525
P HEGER	10/53	12/74	18865
P HUBER	03/42	04/70	12922
A HUNDT	06/57	05/81	21648
M HURLEY	03/52	02/80	18227
S ISAACSON	01/56	09/81	20916
W JEFFERS	11/47	04/81	17611
G JESSEN	05/48	03/75	15884
B JOHNSON	11/59	06/81	23190
R JOHNSON	07/51	05/77	17611
J JUDY	10/46	04/81	17611
K KAISER	06/54	08/80	19525
B KALINA	10/49	01/75	16440
W KALINA	02/43	01/75	14326
P KELLER	05/44	02/76	14828
W KETTLEKAMP	02/36	01/70	12063
R KIMBLER	07/38	08/66	11261
G KRISTJANSO	01/41	08/70	12485
H LANENBERG	07/36	09/67	10880
S LEEDER	10/51	10/80	17611
W LEMBECK	10/41	04/71	12485
M LOISELLE	08/48	10/71	15884
S MALONEY	01/60	10/81	24002
T MANSKE	07/43	11/70	13374
D MARTENSON	09/34	11/66	11261
D MATTSON	12/39	01/66	12063
G MELONY	06/45	11/72	14326
S MINION	06/39	02/67	11655
R MOORE	04/63	11/83	26611
D NAPIER	08/41	06/67	12485
D NICHOLS	03/39	08/67	11655
D NIEMI	05/60	04/83	24002
J NORDSKOG	01/57	09/78	21648
R OLSON	07/54	01/79	19525

Table 2(b)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Projected Benefits for Active Members as of January 1, 1984

NAME	BIRTH DATE	ENTRY DATE	ANNUAL PROJECTED BENEFIT
W PAGET	06/39	07/83	18865
K PAHL	06/48	08/68	15884
E PALMSTEN	07/48	02/83	18865
D PETERSON	03/40	02/68	12063
R PETERSON	03/43	08/75	14326
T PRESSLER	09/35	09/70	12063
L QUADE	03/43	05/77	15347
C REYNOLDS	08/63	11/83	26611
W ROASE	12/58	12/83	23190
K ROBERTS	03/47	01/72	15347
R ROEHL	04/52	09/78	18227
M ROUEN	12/41	09/72	12922
R SCANLON	10/58	12/83	22406
D SCHMELZ	10/55	01/83	20209
R SCHOENBORN	07/40	02/71	12485
K SCHUMAN	08/55	07/75	20209
K SCHUMAN	06/50	09/81	17611
U SEAL	10/57	06/76	21648
G SELINSKY	09/41	06/72	12922
D SHEFLET	02/42	02/69	12922
D SMITH	04/47	02/81	17611
R SMITH	05/52	06/78	18227
W SNYDER	04/38	01/70	12063
C STAINER	10/55	01/75	20209
M STERN	01/43	05/72	13374
B SVEUM	01/52	06/73	18227
A SVOBODNY	07/55	04/83	20209
E SWEIVEN	09/35	09/70	12063
J THOMA	05/40	04/65	12063
D TRAVERS	10/39	10/67	11655
R TROUSDALE	08/52	05/83	18865
L TSCHIMPERL	04/37	01/67	10880
M VOBER	01/44	02/71	13842
D WALKER	12/46	06/74	15347
B WARD	09/62	06/83	25711
E WENSHAU	08/37	09/71	12485
C WILLIAMS	03/43	04/74	13842
C WILSON	06/37	01/66	10880
G WILSON	11/42	04/68	12922
L WISE	03/36	06/68	11261
R WOTTERSPOD	04/49	05/82	13227

Table 2(c)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1984

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
B ANDERSON	RETIRED	810
R ANDERSON	RETIRED	810
J BRENING	DEFERRED	810
L CHADWICK	WIDOW	607
C CHRISTENSEN	WIDOW	607
D CIARDELLI	RETIRED	810
R CLEMENSEN	RETIRED	810
G DOUSETTE	RETIRED	810
J ELLRICH	WIDOW	607
R ELM	RETIRED	810
J ENGBERG	RETIRED	810
R ENGLAND	RETIRED	810
W FABER	DISABLED	810
A FRIENDSHUH	RETIRED	810
A FURULI	RETIRED	810
N GABRIEL	RETIRED	810
P GOETTSCHE	CHILD	607
W HAEG	RETIRED	810
P HALL	RETIRED	810
D HANSON	DISABLED	810
C HECHT	RETIRED	810
C HEDIN	RETIRED	810
R HEDIN	RETIRED	810
K HEGER	RETIRED	810
B HOAGLUND	WIDOW	607
R JUSTEN	DISABLED	810
M KAISER	RETIRED	810
E KEITH	RETIRED	810
C KELLEY	RETIRED	810
O LUND	WIDOW	607
R MACALLISTER	DISABLED	810
R MCDONALD	RETIRED	810
R MCKENZIE	RETIRED	810

810 607
 33 25
 45 7
 27 8

Table 2(c)
(Con't.)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

Monthly Benefits for Inactive Members as of January 1, 1984

<u>NAME</u>	<u>TYPE</u>	<u>MONTHLY BENEFITS</u>
J MCWILLIAMS	DEFERRED	810
G MILLER	RETIRED	810
W NOLEEN	DEFERRED	810
D OLSON	DISABLED	810
M PAHL	RETIRED	810
E PETERSEN	RETIRED	810
D PETERSON	RETIRED	810
S PETERSON	DEFERRED	810
R RUEGER	RETIRED	810
J SAVAGE	RETIRED	810
R SAVAGE	RETIRED	810
V SEGERSTROM	RETIRED	810
B SMITH	RETIRED	810
R SWANSON	DISABLED	810
THOMA	WIDOW	607
R THOMA	DEFERRED	810
A WELTER	RETIRED	810
M ZOCHERT	WIDOW	607

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 Benefit: On termination after completion of 20 years of service, the basic benefit is payable after attainment of age 50.
4. Disability Benefit: 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 the basic benefit is payable to each surviving child until attainment of age 18. Maximum family benefit is 100% of 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 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.