

**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

**Actuarial Valuation
as of January 1, 1981**



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July 9, 1981*

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**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Actuarial Valuation as of January 1, 1981

PURPOSE AND SUMMARY

The purpose of this report is to present the results of our January 1, 1981 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 \$1,223,400 as of January 1, 1981. 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, 1981, a contribution of \$1,284,600 is required. This contribution is in addition to estimated member contributions of \$17,300 for 1981. The results of the valuation are discussed in detail in later sections of the report.

EMPLOYEE DATA

Based on data provided by the Association, there are 120 active members in the Association as of the valuation date. They have an average attained age of 36.7 and an average entry age of 27.7. Table 2(a) 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 also indicates 23 retired members, 3 disabled members, 8 surviving spouses and 5 surviving children, receiving monthly benefits as of January 1, 1981. In addition, 5 terminated members are scheduled to commence receiving benefits at age 50.

Table 2(b) sets forth a listing showing the benefit each inactive member is currently receiving, or will be entitled to receive at age 50. Table 2(c) sets forth a reconciliation of the active and inactive data since the last valuation of January 1, 1979.

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, 1981 benefit levels being determined as follows:

1.	Average Monthly Salary	
(a)	January 1, 1979	1,771
(b)	January 1, 1980	1,942
(c)	January 1, 1981	2,127
(d)	Average	1,947
2.	Monthly Benefits	
(a)	Retirees	
	(1(d) x 1/3)	649
(b)	Surviving Spouses	
	(1(d) x 1/4)	487

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, 1980 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, 1980 of \$6,869,108 less salaries of \$15,050 which were payable as of December 31, 1980 or a total of \$6,854,100 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 from \$512 to \$649 per month as a result of increases in the pay rate of the highest paid non-officer Bloomington policemen.

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.

In the January 1, 1979 actuarial valuation, the prior actuary (George B. Buck Consulting Actuaries, Inc.) revised the discretionary actuarial assumptions from those used in previous valuations performed by Hewitt Associates.

We performed an experience study of the Bloomington Association covering the period January 1, 1975 - December 31, 1977. Except for a modification to the disability assumption, the experience study utilized the Hewitt actuarial assumptions. The study indicated in our opinion that the assumptions in the aggregate were appropriate for use with the plan. We have been informed by the Association that all members will retire at their earliest date of eligibility. Consequently we have continued to use the same assumptions used by Hewitt in the 1975 valuation except that:

1. The disability assumption has been slightly revised to conform with our practice of valuing other Minnesota Fire Department Relief Association Plans; and
2. We have assumed that retirement will occur at the earliest eligibility date - the later of attainment of age 50 and completion of 20 years of service.

Table 4 is a summary of those 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 30 year period beginning on January 1, 1981 and ending on December 31, 2010.

It should be noted that the amortization of the unfunded accrued liability over 30 years represents a change from the prior valuation. This is in accordance with the most recent revision to Chapter 356. In the 1979 valuation, amortization of the unfunded accrued liability was over the 26 year period ending December 31, 2004.

The total annual contribution due as of the valuation date is the sum of the normal cost, the amortization payment and a \$7,200 provision for administrative expenses. The \$7,200 provision for expected expenses is necessary because all expenses are paid from the Special Fund. The \$7,200 amount is based on actual expenses paid from the Special Fund during 1980. 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, 1981, the January 1 contribution amount must be multiplied by 1.05.

VALUATION RESULTS

Table I sets forth the principal results of our valuation. As of the valuation date, there was an unfunded accrued liability of \$7,511,500. This necessitates an amortization payment of \$465,400. Adding this to the net normal cost of \$750,800 and administrative expenses of \$7,200 results in the total contribution payable January 1, 1981 of \$1,223,400.

If payment is made on December 31, 1981, the total required contribution would be \$1,284,600. This requirement is in addition to member contributions of \$17,300 to be made during the year.

CHANGE IN THE UNFUNDED ACCRUED LIABILITY

Chapter 356 requires a reconciliation of the unfunded accrued liability from one valuation to the next valuation. The prior actuary reported an unfunded liability of \$5,364,297 as of January 1, 1979.

Assuming the prior actuary's actuarial assumptions were realized the expected January 1, 1981 unfunded accrued liability is \$5,149,200. As of January 1, 1981 the actual unfunded accrued liability is \$7,511,500. This difference of \$2,362,300 is accountable as follows:

1.	Expected unfunded accrued liability as of January 1, 1981	5,149,200
2.	Net change due to:	
	(a) Revision in actuarial assumptions from prior actuary	729,100
	(b) Salary increases in excess of those assumed	2,380,200
	(c) Favorable asset experience	(302,500)
	(d) Other actuarial gains primarily due to turnover	(444,500)
	(e) Net increase	2,362,300
3.	Actual unfunded accrued liability as of January 1, 1981 (1 + 2(e))	7,511,500

The salary increase was the primary factor in the increase in the unfunded accrued liability. It was also the primary reason for the increase in the annual contribution. Over the period from January 1, 1979 to January 1, 1981, salary increases have averaged 9.6% per year, well in excess of the valuation assumption of 3.5% per year.

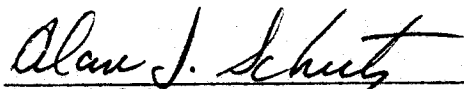
The increase due to the change in assumptions from the prior actuary was due primarily to the change in the assumed retirement age. In the prior year, retirement was assumed to be spread over a multiple of years (about age 51 on the average). In this year's valuation, retirement was assumed to occur at the earliest eligibility date - age 50 and completion of 20 years of service.

* * * * *

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,

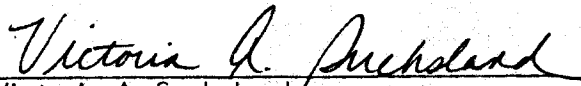
THE WYATT COMPANY



Alan J. Schutz
Associate, Society of Actuaries

Minneapolis/St. Paul

April 20, 1981



Victoria A. Suchsland
Associate, Society of Actuaries

Table I

**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Results of Actuarial Valuation as of January 1, 1981

A. BASIC VALUATION RESULTS

1.	Accrued liability	
a.	Active members	8,666,000
b.	Inactive members	
i.	Retired members	3,542,700
ii.	Disabled members	634,300
iii.	Surviving Spouse	597,300
iv.	Surviving Children	29,200
v.	Terminated members entitled to deferred benefits	896,100
vi.	Total	5,699,600
c.	Total accrued liability	14,365,600
2.	Market value of special fund as of January 1, 1981	6,854,100
3.	Unfunded accrued liability (1 - 2)	7,511,500
4.	Annual normal cost	
a.	Total	768,100
b.	Estimated member contributions	17,300
c.	Net normal cost	750,800

B. ANNUAL CONTRIBUTION

1.	Payable as of January 1, 1981	
a.	Normal cost	750,800
b.	Amortization payment for unfunded accrued liability - 30 years from January 1, 1981	465,400
c.	Administration expenses	7,200
d.	Total	1,223,400
2.	Payable as of December 31, 1981 (1.d x 1.05)	1,284,600

TABLE 2(A)

SLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR ACTIVE MEMBERS AS OF JANUARY 1, 1981

NAME	BIRTH DATE	HIRE DATE	ANNUAL PROJECTED BENEFIT
W ARMAN	09/53	05/78	17529
B ANDERSON	06/43	04/70	12427
L ANDERSON	05/41	10/69	11601
L ANDERSON	02/48	11/77	14759
R ANDERSON	12/31	12/60	8361
G APP	03/41	05/68	11601
J BARNES	01/53	09/79	17529
L BERGQUIST	11/42	11/77	14260
S BLODGETTS	10/43	07/78	14759
R BOESER	05/38	09/67	10463
R BORST	05/42	04/73	12427
J BRENING	01/36	11/61	9767
D CARLSON	05/42	11/66	12007
G CHAPLIN	05/42	09/66	12007
E CHRISTIAN	05/39	12/64	10829
J COLEHOUR	11/46	03/79	15276
D CRUIKSHANK	03/44	11/72	12862
J DIANA	07/43	09/70	12427
D DODDS	04/34	10/68	10463
G DUGAL	01/48	08/79	15276
B DUNHAM	03/55	07/80	18778
D DVORAK	10/46	11/73	13778
D ELFTMANN	03/36	10/67	10109
D ENGBERG	07/40	02/69	11208
W FABER	09/32	05/66	9767
R FALK	09/46	02/71	13778
I FINN	08/37	01/66	10109
S FINN	07/60	04/79	22302
J FINNEGAN	10/45	05/79	15276
N FISCHER	10/42	04/66	12007
M FREEMARK	11/35	10/70	11208
F FUECKER	10/41	08/68	11601
R GABRIEL	06/41	01/64	11601

TABLE 2(A)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR ACTIVE MEMBERS AS OF JANUARY 1, 1981

NAME	BIRTH DATE	HIRE DATE	ANNUAL PROJECTED BENEFIT
J GALE	09/53	11/75	17529
J GASTERLAND	06/45	05/68	13312
C GERDES	12/48	06/74	15276
G GERHARDT	06/42	11/75	13312
J GJEVRE	10/31	02/66	9767
T GUSTAFSON	10/48	12/75	14759
C GUTH	09/55	11/80	18778
G HAEG	08/54	04/75	18143
J HAEG	01/36	12/66	10109
D HANSON	08/47	02/73	14260
J HARRINGER	01/44	10/69	12862
L HAUGAN	03/52	03/77	16936
G HAYDEN	09/45	03/66	13312
K HECHT	10/42	10/74	12862
C HEDIN	04/31	08/62	8361
D HEDIN	10/54	12/74	19143
P HEGER	10/53	12/74	17529
G HOSS	09/44	10/74	12862
P HUBER	03/42	04/70	12007
M HURLEY	03/52	02/80	16936
W JEFFERS	11/47	07/80	15810
G JESSEN	05/48	03/75	14759
R JOHNSON	07/51	05/77	16364
T JOHNSON	03/56	12/80	19435
K KAISER	06/54	08/80	18143
B KALINA	10/49	01/75	15276
W KALINA	02/43	01/75	13312
E KEITH	09/27	12/60	7788
B KELLER	01/58	11/80	20819
P KELLER	05/44	02/76	13778
W KETTLEAMP	02/36	01/70	11206
R KIMBLER	07/38	08/66	10463
G KRISTJANSO	01/41	06/70	11601

TABLE 2(7)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR ACTIVE MEMBERS AS OF JANUARY 1, 1981

NAME	BIRTH DATE	HIRE DATE	ANNUAL PROJECTED BENEFIT
H LAUBENBERG	07/36	09/67	10109
S LEEDER	10/51	10/80	16364
W LEMBECK	10/41	04/71	11601
M LOISELLE	08/48	10/71	14759
R MACALLISTE	06/40	12/68	11208
D MANSKE	10/48	08/75	14759
T MANSKE	07/43	11/70	12427
D MARTENSON	09/34	11/68	10463
D MATTSON	12/39	01/66	11208
J MCCAIN	08/55	11/75	18778
J MCWILLIAMS	03/39	03/63	10829
G MELONY	06/45	11/72	13312
G MILLER	01/33	05/63	8810
S MINION	06/39	02/67	10829
D NAPIER	03/41	08/67	11601
D NICHOLS	03/39	08/67	10829
A NOLEEN	06/37	04/59	10109
J NORDSKOG	01/57	09/78	20115
R OLSON	07/54	01/79	18143
K PAHL	06/48	08/68	14759
D PETERSON	03/40	02/68	11208
R PETERSON	03/43	08/75	13312
S PETERSON	08/36	02/61	9767
T PRESSLER	09/35	09/70	11208
L QUADE	03/43	05/77	14260
S REINHARDT	12/48	03/79	15276
K ROBERTS	03/47	01/72	14260
R ROEHL	04/52	09/73	16936
R ROUEN	12/41	09/72	12007
R SCHOENBORN	07/40	02/71	11601
K SCHUMAN	08/55	01/75	18778
K SCHUMAN	06/50	08/80	15810
U SEAL	10/57	06/76	20115

TABLE 2(A)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR ACTIVE MEMBERS AS OF JANUARY 1, 1981

	NAME	BIRTH DATE	HIRE DATE	ANNUAL PROJECTED BENEFIT
G	SELINSKY	09/41	06/72	12007
D	SHEFLET	02/42	02/69	12007
R	SMITH	05/52	06/78	16936
A	SNYDER	04/38	01/70	11208
C	STAINER	10/55	01/75	18778
A	STERN	01/43	05/72	12427
B	SVEUM	01/52	06/73	16936
R	SWANSON	10/33	04/63	8810
E	SWEIVEN	09/35	09/70	11208
J	THOMA	05/40	04/65	11208
R	THOMA	08/37	03/59	10109
D	TRAVERS	10/39	10/67	10829
L	TSCHIMPERL	04/37	01/67	10109
M	VOBER	01/44	02/71	12862
D	WALKER	12/46	05/74	14260
E	WENSHAU	08/37	09/71	11601
D	WESTERGARD	11/52	08/80	16936
C	WILLIAMS	03/43	04/74	12862
C	WILSON	05/37	01/66	10109
G	WILSON	11/42	04/68	12007
L	WISE	03/36	06/68	10463

TABLE 2(B)

BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR INACTIVE MEMBERS AS OF JANUARY 1, 1981

NAME	TYPE	MONTHLY BENEFITS
B ANDERSON	DEFERRED	✓ 649
R ANDERSON	DISABLED	649 ✓
L CHADWICK	WIDOW	487 —
C CHRISTENSEN	WIDOW	487 —
D CIARDELLI	DEFERRED	✓ 649
R CLEMENSEN	RETIRED	649 ✓
G DOUSETTE	DEFERRED	✓ 649
J ELLRICH	WIDOW	487 —
R ELM	RETIRED	649 ✓
J ENGBERG	RETIRED	649 ✓
R ENGLAND	RETIRED	649 ✓
A FRIENDSHUH	RETIRED	649 ✓
A FURULI	RETIRED	649 ✓
N GABRIEL	RETIRED	649 ✓
P GOETTSCHE	WIDOW	487 —
P GOETTSCHE	CHILD	162
W HAEG	DEFERRED	✓ 649
P HALL	DEFERRED	649 ✓
C HECHT	RETIRED	649 ✓
R HEDIN	RETIRED	649 ✓
K HEGER	RETIRED	649 ✓
S HOAGLUND	WIDOW	487 —
R JUSTEN	DISABLED	649 ✓
M KAISER	RETIRED	649 ✓
C KELLEY	RETIRED	649 ✓
O LUND	WIDOW	487 —
R MCDONALD	RETIRED	649 ✓
R MCKENZIE	RETIRED	649 ✓
D OLSON	DISABLED	649 ✓
M PAHL	RETIRED	649 ✓
E PETERSEN	RETIRED	649 ✓
D PETERSON	RETIRED	649 ✓
R RUEGER	RETIRED	649 ✓

TABLE 2(b)
BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION

PROJECTED BENEFITS FOR INACTIVE MEMBERS AS OF JANUARY 1, 1981

NAME	TYPE	MONTHLY BENEFITS
J SAVAGE	RETIRED	649✓
R SAVAGE	RETIRED	649✓
V SEGERSTROM	RETIRED	649✓
B SMITH	RETIRED	649✓
THOMA	WIDOW	487✓
A WELTER	RETIRED	649✓
H ZOCHERT	WIDOW	487✓

Table 2(c)

**BLOOMINGTON FIRE DEPARTMENT
RELIEF ASSOCIATION**

Reconciliation of Active and Inactive Membership
from January 1, 1979 to January 1, 1981

A. <u>ACTIVE MEMBERS</u>	<u>No.</u>
1. January 1, 1979	124
2. New Entrants	19
3. Separations	
(a) Vested terminations	5
(b) Non-vested terminations	12
(c) Disabilities	1
(d) Deaths	1
(e) Retirements	4
(f) Total separations	23
4. January 1, 1981 (1 + 2 - 3(f))	120
B. <u>RETIRED MEMBERS</u>	
1. January 1, 1979	20
2. New Retirees*	5
3. Deaths	2
4. January 1, 1981	23
*Includes 1 retiree transferred from deferred vested status.	
C. <u>SURVIVING SPOUSES</u>	
1. January 1, 1979	4
2. New Beneficiaries	4
3. Deaths	0
4. January 1, 1981	8

D. DISABLED MEMBERS

1.	January 1, 1979	3
2.	New Disabilities	1
3.	Deaths	1
4.	January 1, 1981	3

E. SURVIVING CHILDREN

1.	January 1, 1979	0
2.	News Recipients	5
3.	January 1, 1981	5

F. DEFERRED VESTED MEMBERS

1.	January 1, 1979	1
2.	New Vested Terminations	5
3.	Transferred to Retiree Status	1
4.	January 1, 1981	5

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 fight a fire. |
| 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. |
| 6. Children's Benefit: | On the death of an active member, 4% of the average salary as defined in the basic benefit is payable to each surviving child until attainment of age 18. Maximum family benefit is the basic benefit. |
| 7. Lump Sum Death Benefit: | On the death of any active or inactive member \$500 is payable. |

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 United States Life Table, 1959 -61, White Males and White Females.
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 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.