BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

ACTUARIAL REPORT

PREPARED AS OF JANUARY 1, 1984

May, 1984

TPF&C TOWERS, PERRIN, FORSTER & CROSBY

BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

ACTUARIAL REPORT

The main purposes of the report are:

1. to present the basic valuation results,
2. to indicate the minimum required contributions for 1984-1987,
3. to review the funded status of the plan,
4. to provide other information required to be reported under Minnesota Statutes.

Highlights from the current and prior valuations are:

1. The minimum required contribution under Chapter 201 of the Minnesota Statutes has decreased to $66,223 for 1984-1987 from $69,904 for 1981-1983. The major reason for the decrease in the minimum required contribution was the favorable investment return during the past years.
2. The actuarial value of assets was sufficient to provide for 85% of the actuarial present value of accumulated retirement plan benefits as of January 1, 1984.

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ACTUARIAL REPORT

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BASIC VALUATION RESULTS

The 1984 valuation results are based upon the plan provisions as of January 1, 1984; there were no changes from the prior valuation dated January 1, 1981. The actuarial methods and assumptions are the same as for the prior valuation except for the change in assumed normal retirement age as described in Table 84-3.

	January 1, 1984	January 1, 1981
1. Normal Cost The portion of the total cost of the plan allocated to the year under the Entry Age Actuarial Cost Method (Table 84-1).	$ 37,886	$ 38,985
2. Actuarial Accrued Liability The portion of the total cost of the plan allocated to prior years under the Entry Age Actuarial Cost Method (Table 84-1).	1,716,582	1,493,590
3. Asset Value The market value of plan assets (Table 84-2).	1,381,153	1,088,993
4. Unfunded Actuarial Accrued Liability (Surplus) The excess of the actuarial accrued liability over the actuarial value of assets; the amount used to determine the portion of contributions attributable to prior years.	335,429	404,597

CONTRIBUTION CONSIDERATIONS

5. Contribution Considerations: The contribution limit for any year is a function of the normal cost for that year and the unfunded actuarial accrued liability.

   a) Annual Payment to Achieve Full Funding of the Unfunded Actuarial Accrued Liability by December 31, 1999.

   A contribution of $66,223 is required to retire the unfunded actuarial liability by December 31, 1999 (as required by Section 201 of the Minnesota Statutes). A summary of the calculations determining this amount is shown as follows:

Normal Cost	$37,886
Annual Deposit Required to Retire Unfunded Actuarial Accrued Liability by 12-31-99	28,337
Total Annual Payment	$66,223

   b) Minimum Contribution to Prevent Increase in Unfunded Actuarial Accrued Liability

   A contribution of $54,657 is required to pay the normal cost for the year and to prevent the unfunded actuarial accrued liability from increasing. The summary of calculations determining this amount is shown as follows:

Normal Cost	$37,886
Interest on Unfunded Actuarial Accrued Liability at 5%	16,771
Minimum Contribution	$54,657

FUNDED STATUS

The unfunded actuarial accrued liability under the Entry Age Actuarial Cost Method is used primarily to determine the component of the target contribution which is allocated to prior years. It is also sometimes used as a measure for evaluating the funded status of the plan. A second and more important standard, the plan continuation liability, is also used to measure the funded status of the plan. Both of these are discussed below:

6. Actuarial Accrued Liability: A comparison of the actuarial value of assets with the actuarial accrued liability provides one measure of the funded status of the plan. The actuarial accrued liability for active participants consists of the portion of the total cost of the plan allocated to prior years under the Entry Age Actuarial Cost Method.

   The actuarial accrued liability for inactive and retired participants consists of the present value of benefits expected to be paid. These values as of the current and prior valuation dates are shown below along with the funded percentage, the ratio of the actuarial value of assets to the actuarial accrued liability.

	January 1, 1984	January 1, 1981
(a) accrued liability	$1,716,582	$1,493,590
(b) actuarial value of assets	1,381,153	1,088,993
(c) funded percentage: (b) / (a)	80%	73%

   Tables 84-1 and 84-2 provide a more detailed breakdown of these amounts. Table 84-3 provides a summary of the underlying actuarial assumptions and methods.

7. Actuarial Present Value of Accumulated Plan Benefits: A comparison of the actuarial value of assets with the actuarial present value of accumulated retirement plan benefits provides another measure of the funded status of the plan. The actuarial present value of accumulated plan benefits (also referred to as the plan continuation liability) consists of the liability for pension and ancillary benefits which have been earned on the basis of each participant's service history as of the valuation date. The values as of the current and prior valuation dates are shown below along with the funded percentage, the ratio of the actuarial value of assets expressed as a percentage of the actuarial present value of accumulated plan benefits:

	January 1, 1984	January 1, 1981
(a) present value of benefits earned to date	$1,622,664	$1,423,860
(b) actuarial value of assets	1,381,153	1,088,993
(c) funded percentage: (b) / (a)	85%	76%

FUNDED STATUS (continued)

Table 84-3 provides a summary of the underlying actuarial assumptions and methods. The benefits valued are those in effect on January 1, 1984 as outlined in Table 84-4. The determination of the actuarial present value of accumulated plan benefits has been made in accordance with generally accepted actuarial principles and practices.

ACTUARIAL METHODS AND ASSUMPTIONS

8. Actuarial Methods and Assumptions: The plan costs developed in this report are estimates of the amounts necessary to provide the benefits to plan participants assuming continued funding of the plan in a systematic manner. These estimates are based upon the actuarial methods selected to allocate the total cost of the plan to various years and actuarial assumptions regarding the return on investments, employee termination rates, mortality rates and other factors. Table 84-3 contains a summary of the actuarial methods and assumptions used in the current valuation and a description of any changes from the prior report.

SOURCES OF VALUATION DATA

9. Asset Data: The primary source of the asset data was information supplied by the Association.

10. Participant Data: The primary source of participant data for the current valuation is a census of all participants as of January 1, 1984 supplied by the Association. A summary of participant data as of January 1, 1984 is provided in Table 84-1.

11. Plan Benefits: A summary of the plan provisions as of January 1, 1984, based upon information provided by the Association, is provided in Table 84-4 with a description of any changes since the prior report.

TOWERS, PERRIN, FORSTER & CROSBY

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BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

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SUMMARY OF VALUATION RESULTS

	January 1, 1984	January 1, 1981
A. Participant Data		
1. Number of participants		
(a) Active participants	36	34
(b) Deferred vested participants	6	6
(c) Retired participants	23	21
(d) Beneficiaries of deceased participants	8	7
(e) Total	73	68
B. Normal Cost		
1. Normal Cost for:		
(a) Service retirement benefits	$ 33,327	$ 31,947
(b) Survivor's benefits	1,617	3,013
(c) Lump-sum death benefit and orphan's benefit	2,942	4,025
(d) Total	37,886	38,985
C. Actuarial Accrued Liability		
1. Active Participants		
(a) Service retirement benefit	637,084	465,777
(b) Survivor's benefits	18,267	14,614
(c) Lump-sum death benefit and orphan's benefit	18,645	0
(d) Total Actuarial Accrued Liability for Active Participants	673,996	480,391

SUMMARY OF VALUATION RESULTS (continued)

	January 1, 1984	January 1, 1981
2. Inactive Members		
(a) Retired members	$ 731,137	$ 678,194
(b) Deferred vested members	99,681	137,134
(c) Beneficiaries of deceased members	211,768	197,871
(d) Total Actuarial Accrued Liability for Inactive Members	1,042,586	1,013,199
3. Total Actuarial Accrued Liability	1,716,582	1,493,590

D. Contribution Considerations

	January 1, 1984	January 1, 1981
1. Annual payment to achieve full funding of unfunded actuarial accrued liability by December 31, 1999	66,223	69,904
2. Minimum contribution to prevent increase in unfunded actuarial accrued liability	54,657	59,215

E. Funded Status

	January 1, 1984	January 1, 1981
1. Actuarial present value of accumulated retirement plan benefits		
(a) Vested benefits		
- retired participants and beneficiaries	942,905	876,065
- terminated vested participants	99,681	137,134
- active participants	487,773	318,625
- subtotal	1,530,359	1,331,824
(b) Nonvested benefits	92,305	92,036
(c) Total	1,622,664	1,423,860
2. Actuarial value of assets	1,381,153	1,088,993
3. Unfunded actuarial present value (surplus): (1) - (2)	241,511	334,867
4. Funded percentage:		
(a) Vested benefits	90%	82%
(b) Accrued benefits	85	76

BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

SUMMARY OF ASSETS

	January 1, 1984
1. Asset value (market basis) as reported by the Association	$1,381,153
2. Support during 1983	
(a) Insurance Premium Tax	51,856
(b) Member's Contributions and Dues	0
(c) Municipal Contribution	16,133
(d) Total Support	67,989
3. Benefits Paid During 1983	
(a) Retirement Benefits	48,542
(b) Death Benefits	0
(c) Widow's and Orphan's Benefits	17,424
(d) Total	65,966

BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS
AS OF JANUARY 1, 1984

A. ACTUARIAL METHODS

1. Calculation of Normal Cost and Actuarial Accrued Liability: The method used to determine the normal cost and actuarial accrued liability was the Entry Age Actuarial Cost Method described below.

   Entry Age Actuarial Cost Method

   Projected pension and ancillary benefits were determined for all active participants under the assumed retirement age. Cost factors designed to produce annual costs as a constant amount in each year from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The actuarial assumptions shown below for normal cost and actuarial accrued liability were used in determining the projected benefits and cost factors. The actuarial accrued liability for active participants (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

   The actuarial accrued liability for retired participants and their beneficiaries currently receiving benefits, active participants past the assumed retirement age and terminated vested participants was determined as the actuarial present value of the benefits expected to be paid. No normal costs are now payable for these participants.

2. Calculations of Actuarial Present Value of Accumulated Plan Benefits: The actuarial method used to determine the actuarial present value of accumulated plan benefits (both vested and non-vested) was the Unit Credit Actuarial Cost Method described below.

   Unit Credit Actuarial Cost Method

   Pension benefits accrued to the valuation date and payable from the assumed retirement age were estimated for active participants under that age. Accrued pension benefits for active participants over the assumed retirement age and inactive participants were either supplied by the Association or estimated. The actuarial present value of accumulated plan benefits was determined by multiplying the accumulated pension benefits by single premium cost factors based on the applicable actuarial assumptions shown below.

SUMMARY OF ACTUARIAL METHODS
AND ASSUMPTIONS AS OF JANUARY 1, 1984 (continued)

B. ACTUARIAL ASSUMPTIONS

Normal Cost and Accrued Liability and Present Value of Accumulated Plan Benefits

1. Investment Return: 5% per year.

2. Mortality: 1971 Group Annuity Table.

3. Termination: A 7% rate from age 20 to age 30, grading to no terminations after age 45.

4. Entry Age: Age on employment date.

5. Retirement Age: The greater of age 52 or the age when the participant has completed 20 years of service.

6. Form of Payment: Joint and 100% to Joint Annuitant Annuity.

7. Asset Basis: Market value.

C. SOURCES OF VALUATION DATA

1. Participant Data: Current and prior data, upon review, appeared to be consistent.

2. Asset Data: The asset data provided by the Association was used by TPF&C without further audit. This information has been relied upon by TPF&C in the preparation of Table 84-2.

3. Benefits Not Valued: The benefits valued included all of those summarized on Table 84-4.

SUMMARY OF ACTUARIAL METHODS
AND ASSUMPTIONS AS OF JANUARY 1, 1984 (continued)

D. CHANGE IN ACTUARIAL METHODS AND ASSUMPTIONS SINCE PRIOR YEAR

The actuarial methods are unchanged from the prior report. The actuarial assumption relating to retirement age has been changed from age 53 to age 52 and 20 years of service.

BROOKLYN CENTER FIRE DEPARTMENT RELIEF ASSOCIATION

SUMMARY OF PLAN PROVISIONS

A. PLAN PROVISIONS AS OF JANUARY 1, 1984

1. Retirement Benefit:

   (a) Requirement:

      (1) 50 years of age.

      (2) 20 years of service.

   (b) Benefit: $250 per month after minimum requirements are met. Alternatively, a lump sum benefit equal to 35% of the base service pension is available after the minimum requirements are met.

   (c) Additional Benefits After Minimum Requirements Are Met: An additional monthly annuity of $12.50 per month for each year of service in excess of 20 through the 25th year.

   (d) Prorata portions of retirement benefits are paid to a member at age 50 who has between 10 and 20 years of service at termination.

2. Spouse's Benefit:

   (a) Before Retirement of Member: Upon death of an active member, a monthly annuity of $250 is paid to the spouse until death or remarriage. Prorata portions of the spouse's benefits are paid on the death of a former member who had between 10 and 20 years of service at termination.

   (b) After Retirement of Member: A continuation of the retirement benefit paid to the member.

3. Children's Benefit:

   (a) Requirement: Member has died with surviving children.

   (b) Benefit: 25% of base service pension paid to each child. Pro rata portions of the children's benefit are paid on the death of a former member who had between 10 and 20 years of service at termination.

SUMMARY OF PLAN PROVISIONS (continued)

A. PLAN PROVISIONS AS OF JANUARY 1, 1984
(continued)

4. Funeral Benefit: A lump-sum benefit of $1,700 will be paid upon the death of a participant. Prorata portions of the funeral benefit are paid on the death of a former member who had between 10 and 20 years of service at termination.

B. CHANGES IN PLAN PROVISIONS SINCE PRIOR YEAR

There have been no changes in plan provisions since the prior report.