J-02a

The Report of the
Twenty Fifth Annual Actuarial Valuation
December 31, 2004
of the
City of Troy Incentive Plan
For Volunteer Firefighters
Troy, Michigan

Submitted to

The City Manager

GRS

Gabriel, Roeder, Smith & Company
Actuaries • Consultants

Table of Contents

Page	Items
1	Cover Letter
2	Summary of Benefit Provisions Evaluated
3	Active Member Data
4	Inactive Member Data
5	Development of Funding Value of Assets
6	Valuation Assets and Actuarial Accrued Liabilities
7	Computed Contribution
8	Gain/(Loss)
9	Comparative Schedule
10-13	Actuarial Assumptions
14-16	Actuarial Accrued Liability

GABRIEL, ROEDER, SMITH & COMPANY
Consultants & Actuaries

One Towne Square • Suite 800 • Southfield, Michigan 48076 • 248-799-9000 • 800-521-0498 • fax 248-799-9020

August 10, 2005

Mr. John M. Lamerato
Assistant City Manager - Finance
City of Troy
500 West Big Beaver Road
Troy, Michigan 48084

Dear John:

Submitted in this report are the results of the Twenty Fifth Annual Actuarial Valuation of the assets, benefit values, reserves and contribution requirements associated with payments provided by the City of Troy Incentive Plan for Volunteer Firefighters. The valuation was based upon data, furnished by your staff, concerning financial operations and individual participants and vested former participants.

The date of the valuation was December 31, 2004.

This report was prepared by actuaries who have substantial experience valuing public employee retirement plans. To the best of our knowledge this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board. The actuarial assumptions used for the valuation produce results which, individually and in the aggregate, are reasonable.

Respectfully submitted,

Brad Lee Armstrong
A.S.A., E.A., M.A.A.A.

Randall J. Dziubek
A.S.A., E.A., M.A.A.A.

BLA:dks:bd

SUMMARY OF PLAN PROVISIONS
(DECEMBER 31, 2004)

NORMAL PAYMENT CONDITIONS

Eligibility - Attainment of age 55 with 10 or more years of incentive service or 30 years of service regardless of age, or attainment of age 50 with 25 or more years of service.

Annual Amount - $518 per year of incentive service, retiring on or after January 1, 2005, $539 per year of incentive service, retiring on or after January 1, 2006, $560 per year of incentive service, retiring on or after January 1, 2007.

VESTING

Eligibility - 10 years of incentive service. Payments commence at age 60.

Annual Amount - See above.

PAYMENTS IN EVENT OF PARTICIPANT'S DEATH

Eligibility - Death of an active participant after 10 years of incentive service.

Annual Amount - Widow receives the amount computed as above but reduced to reflect a 100% joint and survivor election.

POST-RETIREMENT PAYMENT INCREASES

An ad-hoc 10% increase in each current payment was granted in 1986 and 1987.

An ad-hoc 7-1/2% increase in each current payment was granted in 1988.

An ad-hoc 7-1/2% increase in each current payment was granted in 1989, along with a prorated increase based on the difference between the actual incentive service and the twenty-five year maximum which was provided for in Ordinance No. 62.

An ad-hoc $10 per month increase in each current payment was granted in 1990-1994, 1997-2004.

An ad-hoc $5 per month increase in each current payment was granted in 1995.

An ad-hoc $15 per month increase in each current payment was granted in 1996.

ACTIVE PARTICIPANTS - DECEMBER 31, 2004
BY NEAR AGE AND YEARS OF SERVICE

Near Age	Years of Accrued Service							Totals No.
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	
15-19	1							1
20-24	11							11
25-29	9	10						19
30-34	6	2	5					13
35-39	5	3	2	6				16
40-44	9	5	5	5	3			27
45-49	1	5	9	5	7	4		31
50-54	1	3	4	10	6	8		32
55-59		3	2	1	4	1		11
62					1			1
66	1							1
Totals	**44**	**31**	**27**	**27**	**21**	**13**		**163**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Group Averages:

Age: 41.5 years.

Service: 12.0 years.

Note: In addition, there are also 3 members currently on leave of absence.

INACTIVE PARTICIPANTS - BY ATTAINED AGES
DECEMBER 31, 2004

Near Ages	Current Payments		Deferred Payments	
	No.	Annual Payments	No.	Annual Payments
35-39			2	$ 6,492
40-44			8	33,691
45-49			8	22,342
50-54			5	12,837
55-59	3	$ 20,281	3	7,472
60-64	9	49,530		
65-69	21	83,598		
70-74	10	43,135		
75-79	11	34,660		
80+	10	32,563		
Totals	**64**	**$ 263,767**	**26**	**$82,834**

DEVELOPMENT OF FUNDING VALUE OF ASSETS

	Year Ended December 31,	2001	2002	2003	2004	2005	2006	2007
A.	Funding Value Beginning of Year	$ 5,137,078	$ 5,109,422	$ 5,720,336	$ 6,083,672			
B.	Market Value End of Year	4,754,060	6,119,221	6,129,955	6,307,100			
C.	Market Value Beginning of Year	5,066,015	4,754,060	6,119,221	6,129,955			
D.	Non Investment Net Cash Flow#							
	(EE + ER cont.) - (Ret.Ben.+Refunds+Admin.exp.)	(180,410)	244,096	(53,572)	(215,997)			
E.	Investment Income							
E1.	Market Total: B - C - D	(131,545)	1,121,065	64,306	393,142			
E2.	Assumed Rate	6.50%	6.50%	6.50%	6.50%			
E3.	Amount for Immediate Recognition	328,047	340,046	370,081	388,419			
E4.	Amount for Phased-In Recognition	(459,592)	781,019	(305,775)	4,723			
F.	Phased-In Recognition of Investment Income							
F1.	Current Year: 0.25 x E4	(114,898)	195,255	(76,444)	1,181			
F2.	First Prior Year	42,914	(114,898)	195,255	(76,444)	$ 1,181		
F3.	Second Prior Year	(96,499)	42,914	(114,898)	195,255	(76,444)	$ 1,181	
F4.	Third Prior Year	(6,810)	(96,499)	42,914	(114,898)	195,255	(76,444)	$ 1,183
F5.	Total Recognized Investment Gain/(Loss)	(175,293)	26,772	46,827	5,094	119,992	(75,263)	1,183
G.	Funding Value: A + D + E3 + F5	5,109,422	5,720,336	6,083,672	6,261,188			
H.	Difference Between Market & Funding Values	(355,362)	398,885	46,283	45,912			
I.	Recognized Rate of Return	3.0%	7.0%	7.3%	6.6%			

Net of investment expenses.

The Funding Value of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. The Funding Value of Assets is **unbiased** with respect to Market Value. At any time it may be either greater or less than Market Value. If actual and assumed rates of investment income are exactly equal for 3 consecutive years, the Funding Value will become equal to Market Value.

ACTUARIAL ACCRUED LIABILITIES AND ASSETS AS OF DECEMBER 31, 2004

Actuarial Accrued Liabilities For:	
Active Participants	$9,079,078
Inactive Participants	
Current payments	2,466,995
Deferred payments	389,978
Total Actuarial Accrued Liabilities	11,936,051
Funding Value of Assets	6,261,188
Unfunded Actuarial Accrued Liabilities	**$5,674,863**

CITY'S COMPUTED CONTRIBUTION FOR THE FISCAL YEAR BEGINNING JULY 1, 2005

Contribution for:

NORMAL COST	
Age and service payments	$ 303,232
Death-in-service payments	20,825
Total	324,057
UNFUNDED ACCRUED LIABILITIES	
Present recipients	0
Active participants and vested former participants*	450,738
Total	450,738
CITY'S TOTAL CONTRIBUTION	**$ 774,795**

* *Financed over an open period of 25 years.*

Comment A: This plan has a history of benefit increases. The total contribution shown above does not reflect recognition of potential future increases in benefits beyond 2007. The current funding policy of recognizing pension increases as they happen will usually lead to persistent annual increases in the computed contribution requirement and persistent decreases in the funded ratio. If increases are prefunded, this will increase current contributions, but will mitigate the upward pressure on contribution requirements from year to year.

DERIVATION OF ACTUARIAL GAIN (LOSS)
PENSION BENEFITS
YEAR ENDED DECEMBER 31, 2004

1)	UAAL at start of year	$ 5,703,025
2)	Normal cost	342,929
3)	Actual employer contributions	795,904
4)	Interest accrual	355,975
5)	Expected UAAL before changes	5,606,025
6)	Change from benefit increases	65,630
7)	Change from revised actuarial assumptions	0
8)	Expected UAAL after changes	5,671,655
9)	Actual UAAL at end of year	5,674,863
10)	Gain (Loss) (8)- (9)	(3,208)
11)	Gain (Loss) as percent of actuarial accrued liabilities at start of year $11,786,697	(0.0)%

CITY OF TROY INCENTIVE PLAN FOR VOLUNTEER FIREFIGHTERS
COMPARATIVE SCHEDULE

Valuation Date December 31,	Active Participants	Vested Former Participants: Current Payments No.	Current Payments Annual $	Deferred Payments No.	Deferred Payments Annual $	Accrued Liability	Actuarial Value of Assets	Percent Funded	Unfunded Accrued Liability	Computed City Contribution
1991	168	42	$ 99,231	23	$ 33,584	$ 2,497,456	$ 2,299,176	92.1 %	$ 198,280	$ 116,004
1991 *	168	42	99,231	23	33,584	2,734,171	2,299,176	84.1	434,995	148,136
1992	175	43	103,585	21	30,339	2,924,551	2,628,654	89.9	295,897	143,141
1993	175	43	117,580	21	30,339	3,158,344	3,035,303	96.1	123,041	123,409
1993 *	165	48	122,740	21	33,119	3,298,558	3,035,303	92.0	263,255	139,435
1994 *	169	51	136,187	22	39,750	3,749,683	3,236,057	86.3	513,626	171,556
1995	162	54	145,049	21	40,587	4,393,900	3,512,240	79.9	881,660	216,567
1996	166	56	153,241	21	44,897	4,550,356	3,761,590	82.7	788,766	217,131
1996 *	166	56	163,321	21	44,897	4,935,993	3,761,590	76.2	1,174,403	262,950
1997	167	57	171,885	22	47,885	5,223,093	4,211,229	80.6	1,021,885	241,816
1997 *	167	57	178,421	22	47,885	5,635,119	4,211,224	74.7	1,423,895	301,412
1998	163	58	182,869	24	59,570	5,842,019	4,680,224	80.1	1,161,308	279,507
1998 *	163	58	182,869	24	59,570	6,034,103	4,680,711	77.6	1,353,392	304,480
1999	168	58	189,829	24	59,570	6,378,579	5,034,065	78.9	1,344,514	312,346
1999 *#	168	58	189,829	24	59,570	6,789,910	5,051,720	74.4	1,738,190	349,404
2000	159	60	201,427	27	73,879	6,935,229	5,137,078	74.1	1,798,151	353,294
2000 *	159	60	201,427	27	73,879	7,397,365	5,137,078	69.4	2,260,287	413,432
2001	159	62	225,030	28	79,743	7,584,264	5,109,422	67.4	2,474,842	439,616
2001 *	159	62	225,030	28	79,743	8,160,180	5,109,422	62.6	3,050,758	512,973
2002	162	61	232,881	28	86,384	8,717,408	5,720,336	65.6	2,997,072	517,664
2002 *	162	61	232,881	28	86,384	9,598,244	5,720,336	59.6	3,877,908	623,348
2003	171	63	246,090	26	79,680	9,984,801	6,083,672	60.9	3,901,129	650,631
2003 *	171	63	246,090	26	79,680	11,786,697	6,083,672	51.6	5,703,025	795,904
2004	**163**	**64**	**263,767**	**26**	**82,834**	**11,870,421**	**6,261,188**	**52.7**	**5,609,233**	**769,583**
2004 *	**163**	**64**	**263,767**	**26**	**82,834**	**11,936,051**	**6,261,188**	**52.5**	**5,674,863**	**774,795**

* *After changes in benefit provisions.*
\# *After changes in actuarial assumptions.*

COMMENT: It is the actuary's opinion that the required contribution amounts determined by the most recent actuarial valuation are sufficient to meet the System's financial objective, presuming continued receipt of required contributions when due, and no changes in benefit provisions.

VALUATION ASSUMPTIONS

The **entry-age normal cost valuation method** was used in determining payment liabilities and costs.

The **interest rate** used in making the valuation was 6.5 percent per annum, compounded annually. This rate was first used for the December 31, 1999 valuation.

The **mortality table** used was the 1983 Group Annuity Mortality Table. This table was first used for the December 31, 1999 valuation.

	Single Life Values			
	Present Value of $1 Monthly for Life		Future Life Expectancy (Years)	
Sample Ages	Men	Women	Men	Women
50	$151.83	$163.46	$29.18	$34.92
55	141.54	155.23	24.82	30.24
60	129.07	144.87	20.64	25.67
65	114.32	132.18	16.69	21.29
70	98.49	116.95	13.18	17.13
75	82.32	100.05	10.15	13.37
80	66.65	83.11	7.64	10.20

Probabilities of retirement for members eligible for immediate incentive payments were:

Ages	Percent of Eligible Active Participants Separating Within Next Year
48	20%
49	20
50	20
51	20
52	20
53	20
54	20
55	20
56	20
57	20
58	20
59	15
60	15
61	15
62	25
63	100

SAMPLE RATES OF SEPARATION FROM ACTIVE EMPLOYMENT BEFORE AGE 55

Sample Ages	Years of Service	% of Active Participants Seperating Within Next Year
ALL	1	15.00 %
	2	10.00
	3	8.00
	4	7.00
	5	6.00
25	5 & Over	5.00
30		4.50
35		3.55
40		1.45
45		0.75
50		0.75

SUMMARY OF ASSUMPTIONS USED
DECEMBER 31, 2004

Pensions in an Inflationary Environment

VALUE OF $1,000/MONTH RETIREMENT BENEFIT TO AN INDIVIDUAL WHO RETIRES AT AGE 55 IN AN ENVIRONMENT OF 4.00% INFLATION

Age	Value
55	$1,000
56	962
57	925
58	889
59	855
60	822
65	676
70	556
75	457
80	375

The life expectancy of a 55 year old male retiree is age 80. The life expectancy for a 55 year old female retiree is age 85. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age.

SUMMARY OF ASSUMPTIONS USED
MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
DECEMBER 31, 2004

Marriage Assumption. 100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits.

Pay Increase Timing. Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

Decrement Timing. Decrements of all types are assumed to occur mid-year.

Eligibility Testing. Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Benefit Service. Exact fractional service is used to determine the amount of benefit payable.

Decrement Relativity. Decrement rates are used without adjustment for multiple decrement table effects.

Decrement Operation. Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.

Normal Form of Benefit. The assumed normal form of benefit is the straight life form.

Incidence of Contributions. Contributions are assumed to be received continuously throughout the year based upon the computed dollar amounts shown in this report. New entrant normal cost contributions are applied to the funding of new entrant benefits.

ACTUARIAL ACCRUED LIABILITY

The actuarial accrued liability is a measure intended to help users assess (i) a pension fund's funded status on a going concern basis, and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the individual entry-age actuarial cost method. Assumptions, were the same as used to determine the Plan's level dollar annual required contribution between entry-age and assumed exit age. Entry-age was established by subtracting credited service from current age on the valuation date.

The preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

The entry age actuarial accrued liability was determined as part of an actuarial valuation of the plan as of December 31, 2004. Significant actuarial assumptions used in determining the actuarial accrued liability include (a) a rate of return on the investment of present and future assets of 6.5% per year compounded annually, and (b) the assumption that benefits will not increase after retirement.

Actuarial Accrued Liability	
Active members	$9,079,078
Retired members and beneficiaries currently receiving benefits	2,466,995
Vested terminated members not yet receiving benefits	389,978
Total Actuarial Accrued Liability	11,936,051
Actuarial Value of Assets (market value was $6,307,100)	6,261,188
Unfunded Actuarial Accrued Liability	$5,674,863

During the year ended December 31, 2004, the Plan experienced a net change of $149,354 in the actuarial accrued liability, of which $65,630 was attributable to changes in benefit provisions. There were no changes in actuarial assumptions during the year.

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF FUNDING PROGRESS
($ amounts in thousands)

Actuarial Valuation Date December 31,	Actuarial Value of Assets# (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (b)-(a)	Funded Ratio (a)/(b)
1995 *	$3,512	$ 4,394	$ 882	79.9 %
1996 *	3,816	4,936	1,120	77.3
1997 *	4,211	5,635	1,424	74.7
1998	4,681	6,034	1,353	77.6
1999 *&	5,052	6,790	1,738	74.4
2000 *	5,137	7,397	2,260	69.4
2001 *	5,109	8,160	3,051	62.6
2002 *	5,720	9,598	3,878	59.6
2003 *	6,084	11,787	5,703	51.6
2004 *	**6,261**	**11,936**	**5,675**	**52.5**

\# *Prior to 1996, Book Value was used.*
* *After changes in benefit provisions.*
& *After changes in actuarial assumptions.*

Analysis of the dollar amounts of actuarial value of assets, actuarial accrued liability, or actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the system's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending June 30,	Actuarial Valuation Date December 31,	(In thousands) Annual Required Contribution	Percent Contributed
1995	1993	$139	100 %
1996	1994	172	100
1997	1995	217	100
1998	1996	263	100
1999	1997	320	100
2000	1998	330	100
2002	2000	413	100
2003	2001	513	100
2004	2002	623	100
2005	**2003**	**796**	**100**

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

Valuation Date	12/31/2004
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level dollar, open
Remaining Amortization Period	25 years
Asset Valuation Method	4-year smoothed market
Actuarial Assumptions:	
Investment Rate of Return	6.50%
Projected Salary Increases	N/A