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CITY OF TROY INCENTIVE PLAN FOR VOLUNTEER FIREFIGHTERS

27TH ANNUAL ACTUARIAL VALUATION REPORT

DECEMBER 31, 2006

Gabriel Roeder Smith & Company

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July 16, 2007

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 27th 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, 2006.

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:ly:sc

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SUMMARY OF PLAN PROVISIONS
(DECEMBER 31, 2006)

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. Optional forms of payment include a lump sum payment of the actuarial value using valuation assumptions for interest and male mortality.

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 through 1994, inclusive.

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.

An ad hoc $10 per month increase in each current payment was granted in 1997 through 2006, inclusive.

ACTIVE PARTICIPANTS - DECEMBER 31, 2006
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	12	1						13
25-29	9	11	1					21
30-34	8	6	4					18
35-39	6	3	3	2				14
40-44	4	7	3	7	4	1		26
45-49	3	5	6	4	4	4		26
50-54	2	3	5	6	8	2		26
55-59			1	4	3	1	1	10
60		1	1			1		3
68	1							1
Totals	**46**	**37**	**24**	**23**	**19**	**9**	**1**	**159**

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

Group Averages:

Age: 40.8 years.

Service: 11.1 years.

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

INACTIVE PARTICIPANTS - BY ATTAINED AGES
DECEMBER 31, 2006

Near Ages	Current Payments No.	Current Payments Annual Payments	Deferred Payments No.	Deferred Payments Annual Payments
35-39			2	$ 6,492
40-44			2	9,030
45-49			11	37,611
50-54	2	$ 25,272	5	11,529
55-59	9	71,480	5	14,939
60-64	7	40,850		
65-69	12	56,915		
70-74	20	82,727		
75-79	8	29,443		
80+	12	39,852		
Totals	**70**	**$346,539**	**25**	**$79,601**

DEVELOPMENT OF FUNDING VALUE OF ASSETS

	Year Ended December 31,	2003	2004	2005	2006	2007	2008	2009
A.	Funding Value Beginning of Year	$ 5,720,336	$ 6,083,672	$ 6,261,188	$ 6,571,524			
B.	Market Value End of Year	6,129,955	6,307,100	6,261,583	5,768,679			
C.	Market Value Beginning of Year	6,119,221	6,129,955	6,307,100	6,261,583			
D.	Non Investment Net Cash Flow# (EE + ER cont.) - (Ret.Ben.+Refunds+Admin.exp.)	(53,572)	(215,997)	(133,671)	(785,379)			
E.	Investment Income							
E1.	Market Total: B - C - D	64,306	393,142	88,154	292,475			
E2.	Assumed Rate	6.50%	6.50%	6.50%	6.50%			
E3.	Amount for Immediate Recognition	370,081	388,419	402,633	401,624			
E4.	Amount for Phased-In Recognition	(305,775)	4,723	(314,479)	(109,149)			
F.	Phased-In Recognition of Investment Income							
F1.	Current Year: 0.25 x E4	(76,444)	1,181	(78,620)	(27,287)			
F2.	First Prior Year	195,255	(76,444)	1,181	(78,620)	$ (27,287)		
F3.	Second Prior Year	(114,898)	195,255	(76,444)	1,181	(78,620)	$ (27,287)	
F4.	Third Prior Year	42,914	(114,898)	195,257	(76,443)	1,180	(78,619)	$ (27,288)
F5.	Total Recognized Investment Gain/(Loss)	46,827	5,094	41,374	(181,169)	(104,727)	(105,906)	(27,288)
G.	Funding Value: A + D + E3 + F5	6,083,672	6,261,188	6,571,524	6,006,600			
H.	Difference Between Market & Funding Values	46,283	45,912	(309,941)	(237,921)			
I.	Recognized Rate of Return	7.3%	6.6%	7.2%	3.6%			

\# *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.

Development of Unfunded Actuarial Accrued Liability as of December 31, 2006

Actuarial Accrued Liabilities For:	
Active Participants	$8,095,690
Inactive Participants	
Current payments	3,409,856
Deferred payments	426,359
Total Actuarial Accrued Liabilities	11,931,905
Funding Value of Assets	6,006,600
Unfunded Actuarial Accrued Liabilities	**$5,925,305**

Market Value Income Statement for Calendar Year 2006

Plan Assets at Beginning of Year	$ 6,261,583
plus Employer Contributions	790,000
plus Investment Income	292,475
less Monthly Retirement Benefits	223,354
less Lump Sum Retirement Benefits	1,347,592
less Administrative Expenses	4,433
Plan Assets at End of Year	$ 5,768,679

CITY'S COMPUTED CONTRIBUTION FOR THE FISCAL YEAR BEGINNING JULY 1, 2007

Contribution for:

NORMAL COST	
Age and service payments	$ 297,960
Death-in-service payments	20,152
Total	318,112
UNFUNDED ACCRUED LIABILITIES	
Present recipients	0
Active participants and vested former participants*	470,630
Total	470,630
CITY'S TOTAL CONTRIBUTION	**$ 788,742**

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

Comment A: This plan has a history of benefit increases and allows lump sums to be paid at retirement. 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. In the case of this Plan that has a popular lump sum option, this can also lead to negative cash flows which could exhaust the Plan Assets in less than 10 years. This would drive contributions to the level of expenditures, which were $1,575,379 in 2006.

Comment B: The plan's current assumed interest rate assumption can be considered aggressive since the plan is 100% invested in fixed income instruments. The plan has experienced investment losses in 3 out of the last 4 years. If the pattern of losses continues, it will be necessary to lower the interest rate assumption, thereby increasing the future contribution requirements.

Recommendation: If it is the intention of policymakers to continue the practice of annual benefit increases, we recommend that a policy be established of fully funding each year's benefit increase at the time it is granted. If this policy had been in effect for this valuation, the resulting contribution would have been approximately $1,190,000 instead of $788,742.

DERIVATION OF ACTUARIAL GAIN (LOSS)
PENSION BENEFITS
YEAR ENDED DECEMBER 31, 2006

1)	UAAL at start of year	$ 5,480,748
2)	Normal cost	326,801
3)	Actual employer contributions	790,000
4)	Interest accrual	341,195
5)	Expected UAAL before changes	5,358,744
6)	Change from benefit increases#	67,957
7)	Change from revised actuarial assumptions	0
8)	Expected UAAL after changes	5,426,701
9)	Actual UAAL at end of year	5,925,305
10)	Gain (Loss) (8)- (9)	(498,604)
11)	Gain (Loss) as percent of actuarial accrued liabilities at start of year $12,052,272	(4.1)%

$10 per month ad-hoc COLA for retirees.

City of Troy Incentive Plan for Volunteer Firefighters
Comparative Schedule

Valuation Date December 31,	Vested Former Participants				Accrued Liability	Actuarial Value of Assets	Percent Funded	Unfunded Accrued Liability	Computed City Contribution
	Current Payments		Deferred Payments						
	No.	Annual $	No.	Annual $					
1991 *	42	$ 99,231	23	$ 33,584	$ 2,734,171	$ 2,299,176	84.1 %	$ 434,995	$ 148,136
1992	43	103,585	21	30,339	2,924,551	2,628,654	89.9	295,897	143,141
1993 *	48	122,740	21	33,119	3,298,558	3,035,303	92.0	263,255	139,435
1994 *	51	136,187	22	39,750	3,749,683	3,236,057	86.3	513,626	171,556
1995	54	145,049	21	40,587	4,393,900	3,512,240	79.9	881,660	216,567
1996 *	56	163,321	21	44,897	4,935,993	3,761,590	76.2	1,174,403	262,950
1997 *	57	178,421	22	47,885	5,635,119	4,211,224	74.7	1,423,895	301,412
1998 *	58	182,869	24	59,570	6,034,103	4,680,711	77.6	1,353,392	304,480
1999 *#	58	189,829	24	59,570	6,789,910	5,051,720	74.4	1,738,190	349,404
2000 *	60	201,427	27	73,879	7,397,365	5,137,078	69.4	2,260,287	413,432
2001 *	62	225,030	28	79,743	8,160,180	5,109,422	62.6	3,050,758	512,973
2002 *	61	232,881	28	86,384	9,598,244	5,720,336	59.6	3,877,908	623,348
2003 *	63	246,090	26	79,680	11,786,697	6,083,672	51.6	5,703,025	795,904
2004 *	64	263,767	26	82,834	11,936,051	6,261,188	52.5	5,674,863	774,795
2005 *	67	302,477	27	92,676	12,052,272	6,571,524	54.5	5,480,748	762,121
2006	**70**	**346,539**	**25**	**79,601**	**11,863,948**	**6,006,600**	**50.6**	**5,857,348**	**783,345**
2006 *	**70**	**346,539**	**25**	**79,601**	**11,931,905**	**6,006,600**	**50.3**	**5,925,305**	**788,742**

* *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, 2006

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, 2006

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.

Optional Forms of Payment. 6.5% interest, 1983 Group Annuity male mortality for members and 1983 Group Annuity female mortality for beneficiaries.

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, 2006. 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	$ 8,095,690
Retired members and beneficiaries currently receiving benefits	3,409,856
Vested terminated members not yet receiving benefits	426,359
Total Actuarial Accrued Liability	11,931,905
Actuarial Value of Assets (market value was $5,768,679)	6,006,600
Unfunded Actuarial Accrued Liability	$ 5,925,305

During the year ended December 31, 2006, the Plan experienced a net change of ($120,367) in the actuarial accrued liability, of which $67,957 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
2005 *	6,572	12,052	5,481	54.5
2006 *	**6,007**	**11,932**	**5,925**	**50.3**

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
2006	2004	815	105
2007	**2005**	**790**	**104**

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

Valuation Date	12/31/2006
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