Gabriel Roeder Smith & Company
Consultants & Actuaries

CITY OF TROY INCENTIVE PLAN FOR VOLUNTEER FIREFIGHTERS

35TH ANNUAL ACTUARIAL VALUATION

DECEMBER 31, 2014

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GRS

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July 13, 2015

Mr. Thomas Darling
Director of Financial Services
City of Troy
500 West Big Beaver Road
Troy, Michigan 48084

Dear Tom:

Submitted in this report are the results of the 35th 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. We checked for internal and year-to-year consistency, but did not otherwise audit the data. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided.

The purpose of the valuation is to measure the Plan's funding progress, to determine the employer contribution rate for the fiscal year ending June 30, 2017, and to determine certain actuarial reporting information. The results of the valuation may not be applicable for other purposes. The date of the valuation was December 31, 2014.

The actuarial methods and assumptions used in the actuarial valuation are summarized in Section D of this report. The assumptions are established by the Board after consulting with the actuary. **It is our opinion that the current investment rate of return assumption is no longer reasonable for purposes of determining the employer contributions due to the Plan's assets allocation as of the valuation date.** Therefore, we have computed the employer contributions and actuarial results under an alternate investment return assumption in addition to the current assumption. It is our understanding that the City is in the process of establishing a trust for the Plan which will allow the assets of the plan to be invested in accordance with PERSIA. If/when this is completed; we recommend the investment return assumption be re-examined. It is our opinion that all other actuarial assumptions used for the valuation are reasonable.

This report should not be relied upon for any purpose other than the purpose described. It was prepared at the request of the Board and may be shared with other interested parties, but only in its entirety and only with permission from the Board.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

This report was prepared by actuaries who have substantial experience valuing public employee retirement plans and are independent of the plan sponsor. 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 undersigned are independent of the plan sponsor. Jeffrey T. Tebeau is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Kenneth G. Alberts

Jeffrey T. Tebeau, ASA, MAAA

KGA/JTT:ah

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SECTION A

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

FUNDING OBJECTIVE

The funding objective of the Plan is to establish and receive contributions that will remain approximately level from year-to-year and will not have to be increased for future generations of citizens.

CONTRIBUTION RATES

The Plan is supported by City contributions and investment income from Plan assets.

Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

(1) Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section D (the Normal Cost); and

(2) Finance over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (Unfunded Actuarial Accrued Liability or UAAL).

The funding policy adopted by the Board is to determine the employer contribution rate as the employer normal cost plus the amortization of the Unfunded Actuarial Accrued Liability over a 25-year open period.

Computed contributions for the fiscal years ending June 30 are shown below:

	2017		2016
Investment Return Assumption	**Proposed 3.65%**	**Current 6.50%**	
City's Contribution	$ 2,122,856	$ 1,113,496	$ 1,100,632

For additional details, please see Page B-1 of this report.

Executive Summary

Funded Status

Actuarial Accrued Liability and Funding Value of Assets as of the December 31 valuation dates are shown below:

	2014		2013
Investment Return Assumption	**Proposed 3.65%**	**Current 6.50%**	
Actuarial Accrued Liabilities	$ 25,760,735	$ 16,679,670	$ 16,129,421
Funding Value of Assets	8,380,848	8,380,848	6,150,170
Unfunded Actuarial Accrued Liabilities	17,379,887	8,298,822	9,979,251
Percent Funded (Assets/Liabilities)	*32.5%*	*50.2%*	*38.1%*
Rate of Return on Market Value of Assets	*1.9%*	*1.9%*	*4.4%*
Rate of Return on Valuation Assets	*3.9%*	*3.9%*	*5.2%*

The funded status has increased since the last valuation (under the current assumptions). This is due the City's contribution of approximately $3.1 million, which was $2.2 million more than the actuarially determined contribution. The funded status measure shown above is not appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations, nor for assessing the need for, or amount of, future contributions.

For additional details, please see Sections B and C of this report.

SECTION B

VALUATION RESULTS

CITY'S COMPUTED CONTRIBUTION FOR THE FISCAL YEAR ENDING JUNE 30, 2017

Investment Return Assumption^	Proposed 3.65%	Current 6.50%
Contribution for:		
NORMAL COST		
Age and service payments	$ 952,729	$ 442,041
Death-in-service payments	31,567	16,377
Total	984,296	458,418
UNFUNDED ACCRUED LIABILITIES		
Present recipients	0	0
Active participants and vested former participants*	1,138,560	655,078
Total	1,138,560	655,078
CITY'S TOTAL CONTRIBUTION FYE JUNE 2017	**$2,122,856**	**$1,113,496**

* *Financed over an open period of 25 years. Includes the effects of the one and a half year lag between the valuation date and the contribution period.*

^ *The Proposed investment return assumption is 3.65%. The current investment return assumption of 6.5% is no longer reasonable given the Plan's asset allocation as of the valuation date.*

DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES AS OF DECEMBER 31, 2014

Investment Return Assumption^	**Proposed 3.65%**	**Current 6.50%**
Actuarial Accrued Liabilities for:		
Active Participants*	$15,990,601	$9,516,273
Inactive Participants		
Current payments	8,441,540	6,359,094
Deferred payments	1,328,594	804,303
Total Actuarial Accrued Liabilities	25,760,735	16,679,670
Funding Value of Assets	8,380,848	8,380,848
Unfunded Actuarial Accrued Liabilities	**$17,379,887**	**$8,298,822**
Percent Funded	32.5%	50.2%

* *Includes participants on Leave of Absence.*

^ *The Proposed investment return assumption is 3.65%. The current investment return assumption of 6.5% is no longer reasonable given the Plan's asset allocation as of the valuation date.*

DERIVATION OF ACTUARIAL GAIN (LOSS)
YEAR ENDED DECEMBER 31, 2014

1)	UAAL at start of year	$ 9,979,251
2)	Normal cost	447,479
3)	Actual employer contributions	3,078,500
4)	Interest accrual	563,143
5)	Expected UAAL before changes	7,911,373
6)	Change from benefit increases	0
7)	Change from revised actuarial assumptions/methods	9,081,065
8)	Expected UAAL after changes	16,992,438
9)	Actual UAAL at end of year	17,379,887
10)	Gain (Loss): (8) - (9)	(387,449)
11)	Gain (Loss) as percent of actuarial accrued liabilities at start of year $16,129,421	(2.4)%

SUMMARY STATEMENT OF PLAN RESOURCES AND OBLIGATIONS

PRESENT RESOURCES AND EXPECTED FUTURE RESOURCES

	December 31, 2014		December 31, 2013
Investment Return Assumption	**Proposed 3.65%**	**Current 6.50%**	
A. Present valuation assets			
1. Net assets from Plan financial statements	$ 8,019,952	$ 8,019,952	$ 5,940,674
2. Market value adjustment	360,896	360,896	209,496
3. Funding value of assets	8,380,848	8,380,848	6,150,170
B. Actuarial present value of expected future employer contributions			
1. For Normal Costs	10,022,337	3,756,443	3,143,467
2. For Unfunded Actuarial Accrued Liability	17,379,887	8,298,822	9,979,251
3. Total	27,402,224	12,055,265	13,122,718
C. Actuarial Present Value of Expected Future Member Contributions	0	0	0
D. Total present and expected future resources	**$35,783,072**	**$20,436,113**	**$19,272,888**

ACTUARIAL PRESENT VALUE OF EXPECTED FUTURE BENEFIT PAYMENTS

	December 31, 2014 Proposed 3.65%	December 31, 2014 Current 6.50%	December 31, 2013
A. To retirees and beneficiaries	$ 8,441,540	$ 6,359,094	$ 5,866,849
B. To vested terminated members	1,328,594	804,303	822,145
C. To present active members			
1. Allocated to service rendered prior to valuation date - actuarial accrued liability	15,990,601	9,516,273	9,440,427
2. Allocated to service likely to be rendered after valuation date	10,022,337	3,756,443	3,143,467
3. Total	26,012,938	13,272,716	12,583,894
D. Total actuarial present value of expected future benefit payments	**$35,783,072**	**$20,436,113**	**$19,272,888**

COMPARATIVE SCHEDULE

Valuation Date December 31,	Fiscal Year Ending June 30,	Vested Former Participants				Accrued Liability	Funding Value of Assets	Percent Funded	Unfunded Accrued Liability	Computed City's Contribution
		Current Payments		Deferred Payments						
		No.	Annual $	No.	Annual $					
1998 *	2000	58	$ 182,869	24	$ 59,570	$ 6,034,103	$ 4,680,711	77.6 %	$ 1,353,392	$ 304,480
1999 *#	2001	58	189,829	24	59,570	6,789,910	5,051,720	74.4	1,738,190	349,404
2000 *	2002	60	201,427	27	73,879	7,397,365	5,137,078	69.4	2,260,287	413,432
2001 *	2003	62	225,030	28	79,743	8,160,180	5,109,422	62.6	3,050,758	512,973
2002 *	2004	61	232,881	28	86,384	9,598,244	5,720,336	59.6	3,877,908	623,348
2003 *	2005	63	246,090	26	79,680	11,786,697	6,083,672	51.6	5,703,025	795,904
2004 *	2006	64	263,767	26	82,834	11,936,051	6,261,188	52.5	5,674,863	774,795
2005 *	2007	67	302,477	27	92,676	12,052,272	6,571,524	54.5	5,480,748	762,121
2006 *	2008	70	346,539	25	79,601	11,931,905	6,006,600	50.3	5,925,305	788,742
2007 *	2009	73	372,705	23	75,828	13,239,695	6,412,626	48.4	6,827,069	885,365
2008 *	2010	74	403,828	24	89,238	13,037,843	6,272,677	48.1	6,765,166	864,167
2009 *	2011	79	477,636	27	110,008	12,625,243	5,325,404	42.2	7,299,839	873,691
2010	2012	77	491,385	27	110,008	12,925,065	5,709,574	44.2	7,215,491	873,354
2011	2013	79	507,267	26	105,942	13,476,184	6,356,765	47.2	7,119,419	868,074
2011	2014	79	507,267	26	105,942	13,476,184	6,356,765	47.2	7,119,419	858,472
2012	2015	80	535,321	25	102,542	13,115,192	5,983,106	45.6	7,132,086	843,872
2013 *#	2016	80	549,601	27	121,398	16,129,421	6,150,170	38.1	9,979,251	1,100,632
2014	**2017**	**82**	**582,139**	**26**	**129,221**	**16,679,670**	**8,380,848**	**50.2**	**8,298,822**	**1,113,496**
2014 ^	**2017**	**82**	**582,139**	**26**	**129,221**	**25,760,735**	**8,380,848**	**32.5**	**17,379,887**	**2,122,856**

* *After changes in benefit provisions.*
\# *After changes in actuarial assumptions.*
^ *Proposed 3.65% investment return assumption.*

COMMENTS

Actuarial Experience: Overall Plan experience was less favorable than assumed during the year ending December 31, 2014 as shown in the gain (loss) schedule on page B-3. The experience loss of $387,449 is primarily attributable to investment losses and higher than expected benefit payouts. The rate of return on was 3.9% on the Funding Value of Assets and was 1.9% on a Market Value basis.

The City contributed approximately $3.1 million to the Plan in 2014, which was $2.2 million more than the actuarially determined contribution. The additional City contribution was the reason the funded percent increased from 38.1% to 50.2% (under the current assumptions) despite the experience losses. The funded percent using the Market Value of Assets is 48.1% due to deferred recognized losses in the asset smoothing method. Absent future gains, this should put upward pressure on future employer contributions. Under the proposed assumptions, the funded percent is 32.5% on a funding value basis and 31.1% on a Market Value basis.

Comment A: We recently received new information about the plan's investments. The Plan's current investment return assumption of 6.5% can no longer be considered reasonable since the Plan's assets are primarily invested in cash and fixed income and the current long-term outlook for this class of assets has fallen substantially in the last couple of years. The Plan has averaged about 3.2% over the last three years on a Market Value basis and 5.2% on a Funding Value basis. Due to the Plan's asset allocation, we recommend using the proposed investment return assumption of 3.65%. This rate is based on the "State and local bonds" rate from the Federal Reserve statistical release as of December 25, 2014. It is our understanding the City is in the process of establishing a trust for the Plan which would allow the use of investments expected to yield higher returns than the current allocation. If/when this trust is established and the asset allocation is changed, the investment return assumption could then be re-examined. If the current assumption of 6.5% is determined to be reasonable, the City's contributions calculated under the current assumption could be used for funding the plan. However, until the trust is established and an investment policy adopted, we recommend the Board adopt the 3.65% investment return assumption since the current assumption is no longer reasonable.

COMMENTS (CONCLUDED)

Comment B: This Plan has a history of benefit increases and allows lump sums to be paid at retirement. The total contributions shown in this report assume that the base benefit will increase to $681 on July 1, 2015, $724 on July 1, 2016, and $769 on July 1, 2017. The total contribution also assumes that the base benefit would then increase by 1.0% per year. This Plan has a popular lump sum option. If actuarially determined contribution requirements are not made on a timely basis, this can lead to negative cash flows and could exhaust the Plan assets in less than 10 years, especially given the current asset allocation. This would drive contributions to the level of expenditures, which would create extreme volatility and potentially much higher contributions. It is our understanding the City may be removing the lump sum option in the near future.

SECTION C

VALUATION DATA

SUMMARY OF PLAN PROVISIONS VALUED (DECEMBER 31, 2014)

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 –

Retiring			Fixed Annual Amount per Year of Incentive Service at Retirement
1/1/2005	-	12/31/2005	$518.00
1/1/2006	-	12/31/2006	$539.00
1/1/2007	-	12/31/2007	$560.00
1/1/2008	-	12/31/2008	$582.00
1/1/2009	-	6/30/2014	$605.00
7/1/2014	-	6/30/2015	$642.00
7/1/2015	-	6/30/2016	$681.00
7/1/2016	-	6/30/2017	$724.00
7/1/2017	-	6/30/2018	$769.00
7/1/2018	and after		Assumed 1% increases

Optional forms of payment include a lump sum payment of the actuarial value.

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.

SUMMARY OF PLAN PROVISIONS VALUED
(DECEMBER 31, 2014)

POST-RETIREMENT PAYMENT INCREASES

Year	Ad-Hoc Increase
1986	10.0% increase in each current payment
1987	10.0% increase in each current payment
1988	7.5% increase in each current payment
1989	7.5% increase in each current payment
1989	Prorated increase based on difference between actual incentive service and the 25-year maximum which was provided for Ordinance No. 62
1990-1994	$10 per month increase in each current payment
1995	$ 5 per month increase in each current payment
1996	$15 per month increase in each current payment
1997-2009	$10 per month increase in each current payment
2010-2014	None

ACTIVE PARTICIPANTS - DECEMBER 31, 2014
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	
20-24	6	1						7
25-29	17	8						25
30-34	7	4	6					17
35-39	12	5	6	6				29
40-44	3	9	1	2	3			18
45-49	1	4	4		2	6		17
50-54	2	3	7	4	4	2	1	23
55-59			1		2			3
61	1							1
62		1						1
65							1	1
Totals	**49**	**35**	**25**	**12**	**11**	**8**	**2**	**142**

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

Group Averages:

Age: 39.1 years.
Service: 10.0 years.

LEAVE OF ABSENCE PARTICIPANTS - DECEMBER 31, 2014
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	
20-24	1						1
25-29	1						1
40-44			1				1
50-54	1						1
Totals	**3**	**0**	**1**	**0**	**0**	**0**	**4**

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

Group Averages:

Age:	35.8 years.
Service:	4.4 years.

INACTIVE PARTICIPANTS - BY NEAR AGES
DECEMBER 31, 2014

Near Ages	Current Payments No.	Current Payments Annual Payments	Deferred Payments No.	Deferred Payments Annual Payments
30-34			1	$ 6,100
35-39			2	15,932
40-44			2	15,016
45-49			3	12,945
50-54	4	$ 62,958	11	59,244
55-59	14	157,348	7	19,984
60-64	13	116,173		
65-69	9	57,578		
70-74	8	47,727		
75-79	17	73,374		
80+	17	66,981		
Totals	**82**	**$582,139**	**26**	**$129,221**

DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended December 31,	2013	2014	2015	2016	2017
A. Funding Value Beginning of Year	$ 5,983,106	$ 6,150,170			
B. Market Value End of Year	5,940,674	8,019,952			
C. Market Value Beginning of Year	5,823,408	5,940,674			
D. Non-Investment Net Cash Flow					
(ER cont.) - (Ret. Ben.+Refunds)	(137,866)	1,950,257			
E. Investment Income					
E1. Market Total: B - C - D	255,132	129,021			
E2. Assumed Rate	6.50%	6.50%			
E3. Amount for Immediate Recognition: (D/2 + A)*E2	384,421	463,144			
E4. Amount for Phased-In Recognition: E1 - E3	(129,289)	(334,123)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 x E4	(32,322)	(83,531)			
F2. First Prior Year	(45,660)	(32,322)	$ (83,531)		
F3. Second Prior Year	(21,212)	(45,660)	(32,322)	$ (83,531)	
F4. Third Prior Year	19,703	(21,210)	(45,659)	(32,323)	$ (83,530)
F5. Total Recognized Investment Gain (Loss)	(79,491)	(182,723)	(161,512)	(115,854)	(83,530)
G. Funding Value: A + D + E3 + F5	6,150,170	8,380,848			
H. Difference Between Market & Funding Values	(209,496)	(360,896)			
I. Recognized Rate of Return	5.2%	3.9%			
J. Market Rate of Return	4.4%	1.9%			

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.

SUMMARY OF CURRENT ASSET INFORMATION FURNISHED FOR VALUATION

BALANCE SHEET

Cash and Short-Term	$ 5,358,857
US Government/Agency Bonds	2,604,390
Municipal Securities	56,705
Total Market Value of Plan Assets	**$ 8,019,952**

REVENUES AND EXPENDITURES FOR CALENDAR YEAR 2014

Plan Assets at Beginning of Year	$5,940,674
Plus Employer Contributions	3,078,500
Plus Investment Income	152,541
Less Monthly Retirement Benefits and Lump Sum Payments	1,128,243
Less Investment Expenses	-
Less Administrative Expenses	23,520
Plan Assets at End of Year	**$8,019,952**

SECTION D

VALUATION METHODS AND ASSUMPTIONS

ACTUARIAL COST METHOD

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the individual entry-age actuarial cost method having the following characteristics:

(i) the annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded Actuarial Accrued Liabilities (the portion of total liabilities not covered by present assets or expected future normal cost contributions) were amortized by level (principal or interest combined) dollar contributions over an open period of 25 years. This UAAL payment reflects payments expected to be made between the valuation date and the date contributions determined by this report are scheduled to be made.

Funding Value of Assets. The valuation assets used for funding purposes is derived as follows: prior year valuation assets are increased by contributions and expected investment income and reduced by refunds, benefit payments and expenses. To this amount is added 25% of the difference between expected and actual investment income for each of the previous four years.

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATIONS

The contribution requirements and benefit values of the Plan are calculated by applying actuarial assumptions to the benefit provisions and people information furnished, using the actuarial cost method described on the previous page. All actuarial assumptions are based on future expectations, not market measures.

The principal areas of financial risk which require assumptions about future experiences are:

(i) long-term rates of investment return to be generated by the assets of the System
(ii) rates of mortality among members, retirees and beneficiaries
(iii) rates of withdrawal of active members (without entitlement to a retirement benefit)
(iv) rates of disability among members
(v) the age patterns of actual retirement

In a valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives - - - a period of time which can be as long as a century.

Actual experience of the Plan will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments to the computed contribution rate. The mortality assumption was reviewed and updated based on the for the December 31, 2013 valuation. A description of the recommended changes in the investment return assumption, their rationale, and impact are included in this report.

All actuarial assumptions are estimates of future experience. From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

VALUATION ASSUMPTIONS

The rate of investment return (net of administrative expenses) used in making the valuation was 6.5% per annum, compounded annually. This rate was first used for the December 31, 1999 valuation. **We recommend changing this assumption to 3.65% due to the Plan's asset allocation.** This rate is based on the "State and local bonds" rate from the Federal Reserve statistical release as of December 25, 2014.

The mortality table used was the RP-2000 Mortality Table, projected to the year 2017 using Projection Scale BB, set back 0 years for men and 0 years for women. This table was first used for the December 31, 2013 valuation. The provision for future mortality improvements is reflected in the projection from the valuation year to 2017.

	Single Life Values			
	Present Value of $1 Monthly for Life		Future Life Expectancy (Years)	
Sample Ages	Men	Women	Men	Women
50	$159.46	$163.65	32.66	35.29
55	150.22	155.46	28.05	30.61
60	138.97	145.17	23.61	26.04
65	125.69	132.82	19.42	21.70
70	110.44	118.72	15.53	17.68
75	93.53	103.13	12.00	14.02
80	75.85	86.36	8.93	10.76

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

Percent of Eligible Active Participants Separating within Next Year			
Age Based		Service Based	
Ages	Percent	Service	Percent
48	20%	30	20%
49	20%	31	20%
50	20%	32	20%
51	20%	33	20%
52	20%	34	20%
53	20%	35	20%
54	20%	36	20%
55	20%	37	20%
56	20%	38	20%
57	20%	39	20%
58	20%	40	100%
59	15%		
60	15%		
61	15%		
62	25%		
63	100%		

VALUATION ASSUMPTIONS

Rates of separation from active employment (before age 55) used were:

Sample Ages	Years of Service	% of Active Participants Separating 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

VALUATION ASSUMPTIONS

Pensions in an Inflationary Environment

VALUE OF $1,000/MONTH RETIREMENT BENEFIT TO AN INDIVIDUAL WHO RETIRES AT AGE 55 IN AN ENVIRONMENT OF 3.00% INFLATION

Age	Value
55	$1,000
56	971
57	943
58	916
59	889
60	863
65	745
70	643
75	554
80	478

The life expectancy of a 55 year old male retiree is age 83. 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.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS
DECEMBER 31, 2014

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

Pay Increase Timing. Not applicable.

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, 100% unisex blend of the RP-2000 Mortality Table, projected to the year 2017 using Projection Scale BB, set back 0 years for men and 0 years for women. A margin for future mortality improvements is included in these tables.

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.

Leave of Absence Members. All members indicated as on leave of absence as of the valuation date are assumed to return to full employment one year after the valuation date.

Ad-Hoc Increases to Base Benefit. After 7/1/2017, the base benefit amount is assumed to increase by 1.0% per year with no increase after retirement.

SECTION E

DISCLOSURE MATERIAL IN CONFORMANCE WITH STATEMENT NO. 25 OF THE GOVERNMENTAL ACCOUNTING STANDARDS BOARD

This information is presented in draft form for review by the City's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the City's financial statements.

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 actuarial cost method complies 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, 2014. 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 (current assumption) and 3.65% (proposed assumption) compounded annually, and (b) the assumption that benefits will not increase after retirement.

Investment Return Assumption	**Proposed 3.65%**	**Current 6.50%**
Actuarial Accrued Liability		
Active members*	$ 15,990,601	$ 9,516,273
Retired members and beneficiaries currently receiving benefits	8,441,540	6,359,094
Vested terminated members not yet receiving benefits	1,328,594	804,303
Total Actuarial Accrued Liability	25,760,735	16,679,670
Actuarial Value of Assets (market value was $8,019,952)	8,380,848	8,380,848
Unfunded Actuarial Accrued Liability	$ 17,379,887	$ 8,298,822

**Including members on leave of absence.*

During the year ended December 31, 2014, the Plan experienced a net change of $550,249 in the Actuarial Accrued Liability. There were no changes in benefit provisions. The Actuarial Accrued Liability increased by $9,081,065 due to changing the investment return assumption to 3.65%.

GASB Statement No. 25 applies to pension "trust funds". Based on newly provided information, we understand that the plan assets are not in a qualified trust. We recommend confirming with the plan's auditor whether or not GASB Statement No. 25 applies. New plan disclosure requirements under GASB Statement No. 67 or No. 73 will be required based on the status of the plan assets in trust.

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)
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
2007 *	6,413	13,240	6,827	48.4
2008 *	6,273	13,038	6,765	48.1
2009 *	5,325	12,625	7,300	42.2
2010	5,710	12,925	7,215	44.2
2011	6,357	13,476	7,119	47.2
2012	5,983	13,115	7,132	45.6
2013 *&	6,150	16,129	9,979	38.1
2014	**8,381**	**16,680**	**8,299**	**50.2**
2014 ^	**8,381**	**25,761**	**17,380**	**32.5**

\# *Prior to 1996, Book Value was used.*
* *After changes in benefit provisions.*
& *After changes in actuarial assumptions.*
^ *Based on the proposed investment return assumption is 3.65%.*

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 plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the plan 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.

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending June 30,	Actuarial Valuation Date December 31,	Annual Required Contribution (in thousands)	Percent Contributed
2001	1999	$360	100 %
2002	2000	413	100
2003	2001	513	100
2004	2002	623	100
2005	2003	796	100
2006	2004	775	105
2007	2005	762	104
2008	2006	789	101
2009	2007	885	100
2010	2008	864	100
2011	2009	874	100
2012	2010	873	100
2013	2011	868	100
2014	2011	858	100
2015	**2012**	**844**	**NA**

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

Valuation Date	12/31/2014
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:	
Current Investment Rate of Return	6.50%
Proposed Investment Rate of Return	3.65%
Projected Salary Increases	N/A

GRS
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July 13, 2015

Mr. Thomas Darling
Director of Financial Services
City of Troy
500 West Big Beaver Road
Troy, Michigan 48084

Dear Tom:

Enclosed are fifteen copies of the report of the 35th Annual Actuarial Valuation of the City of Troy Incentive Plan for Volunteer Firefighters.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Jeffrey T. Tebeau

JTT:ah
Enclosures

cc: Nate Baldermann (1 report copy + 1 electronic copy)