ANALYSIS OF FIRE SAFETY SYSTEMS IN THE MUNICIPALS OF LATVIA: THE POSSIBILITY OF BUILDING NEW FIRE STATIONS

Jānis Bartušauskis, Riga Technical University
Institute of Occupational Safety and Civil Defence

Introduction

Each year fires in Latvia take's people's lives. This year their number in the first three months is already 32 while 89 people died in year 2015. In radio and television news we hear words "a man has burnt to death in fire...", but more than 75% of those who died in fires had suffocated with smoke in those fatal minutes even before open flame appeared, before neighbors or passers call the firefighters or during time interval until the fire brigade arrives at the scene, as a result of that 50% of fires break out in the residential sector. In addition, the statistical data points out a significant number of fires and number of fatalities in Latvia.

The authors believe that increasing the numbers of the firefighter depos will provide the possibility to save both: the financial resources for extinguishing of fires and elimination of their consequences and to prevent the loss of material values and, most important, to save human life, therefore the presented article analyses the possibilities of creating the network of firefighter depos and constructing new firefighter depos in towns of national and regional importance at Republic of Latvia.

Dynamics of the numbers of fires and fatalities in Latvia within 2010-2016

I	2010	2011	2012	2013	2014	2015	2016 Q1
Number of fires	8,997	8,812	8,536	9,821	12,175	10,311	**2,663**
Number of fatalities	**102**	**122**	**99**	**104**	**94**	**89**	**32**

Source: Statistical data of State Fire and Rescue Service

Comparison of population density and SFRS units arrival time in 2010 and 2015 in Latvia according to regulations

	Area, km²	2010	2015	Population density comparison 2010 vs 2015	Arrival times		
		Population density (inhabitants per km²)	Population density (inhabitants per km²)		15 min, CM Regulation	25 min, CM Regulation	Actual time, min
Aizkraukle	102	91	83	– 8	15	-	16.20
Aluksne	1,699	10	9	– 1	-	25	18.50
Balvi	1,045	14	12	– 2	15	-	17.75
Bauska	786	34	31	– 3	15	-	13.72
Cesis	173	109	98	– 11	15	-	19.87
Dobele	888	26	24	– 2	15	-	15.46
Gulbene	1 872	13	12	– 1	15	-	14.65
Kraslava	1 079	17	15	– 2	15	-	18.31
Kuldiga	1 756	15	14	– 1	15	-	14.73
Limbazi	1 170	16	15	– 1	15	-	17.04
Ludza	966	15	14	– 1	15	-	17.36
Madona	2 160	12	11	– 1	15	-	19.24
Ogre	990	37	35	– 2	15	-	20.45
Preili	364	30	27	– 3	15	-	17.59
Saldus	1 682	16	14	– 2	15	-	17.55
Smiltene	947	14	13	– 1	15		17.51
Talsi	1 763	18	17	– 1	15	-	17.73
Tukums	1 194	26	24	– 2	15	-	17.09
Valka	908	11	9	– 2	-	25	17.85

Determination of number of fire stations in towns of national importance

City/town	Urban area, km²	K_n	$V_{average}$	$\tau_{average}$	a	Service territory of unit (km²)	N_d
Riga	307.17	1.4	30	9.32	0.5	10.57	29.1
Daugavpils	72.48	1.4	30	6.23	0.5	23.66	3.1
Jelgava	60.1	1.4	30	4.77	0.5	40.36	1.5
Jurmala	100	1.4	30	9.32	0.5	10.57	9.5
Liepaja	60.37	1.4	30	6.21	0.5	23.81	2.5
Rezekne	17.48	1.4	30	5.67	0.5	28.57	0.6
Ventspils	55.4	1.4	30	6.6	0.5	21.08	2.6
Valmiera	19.35	1.4	30	5.27	0.5	33.07	0.6
Jekabpils	23	1.4	30	7.81	0.5	15.06	1.5

Conclusion

1. Standards, which specify the norms for the collocation of firefighter depos network and construction of new depos in towns of national importance, have already become obsolete and any longer do not meet the current criteria.
2. Changes in population numbers should be accompanied with changes in firefighters provided services, construction of new fire stations and changes in their location.
3. When specifying the firefighter station network in towns of national importance, the average area of service territory for one station have to be planned about 12 km2.
4. In any case, firefighter's brigade arrival time to the fire site should not exceed 5-6 minutes.
5. Riga would need 30 municipal firefighter units, Jurmala – 10, while the least number of units could be at Rezekne and Valmiera – 0.6, or one unit.
6. The largest number of depos would be needed in the capital city – 63, while the smallest number of depos, as smallest by area, at Rezekne and Valmiera – only 4.
7. The number of SFRS firefighter station buildings is insufficient and the Government should find a funding for systematic construction of new firefighter station buildings during drawing up of the budget.
8. It would be necessary to build at least 15 new firefighter station buildings.

Thank You!