Software version:	MagiCAD 2018 UR-2.1
Calculation date:	29.05.2018 14:09

Project:	SWECO NORGE AS
Project number:	28942001
Location:	PROFESSOR BROCHS GATE 2
	7030 TRONDHEIM
Author:	Kari D. Viken
Project:	Rissa Omsorgsboliger
Design area:	Teknisk rom loft
Hazard class:	OH3, Ordinary Hazard Group 3
Hydraulic model:	Hazen-Williams
Calculation is based on:	EN 12845

Note: Equiv. length of short connection bra L < 50 mm

Property	Value	Unit
Fluid characteristics:		
Density:	1000	[kg/m³]
Dynamic viscosity:	1560.20	[kg/ms x 10e-6]
Calculation input values:		
Area of design area:	131.5	[m²]
Feed point:	1	H = 0.0 [m]
Weakest sprinkler:	70	H = 10.0 [m]
Pressure at the weakest sprinkler:	500	[mbar]
Max number of iterations:	100	
Max inaccuracy of the pressure:	1.0	[mbar]
Max inaccuracy of the flow:	0.1	[l/min]
C-factors of the pipes and K-factors of the sprinklers:		
DN: Stålrør normaltykke	120	
SP-15-K80-68DGR-STD	80	
Calculation results:		
Pressure level at the feed point:	3437	[mbar]
Flow at the feed point:	2159.2	[l/min]
Flow at the weakest sprinkler:	56.6	[l/min]
Number of iterations:	2	
Inaccuracy of the pressure:	0.02	[mbar]
Inaccuracy of the flow:	0.07	[l/min]
Total area of coverage:	131.2	[m²]
Average area of coverage:	4.1	[m²]
Flow density at the weakest sprinkler:	13.09	[mm/min]
Average density of 4 weakest sprinklers:	14.30	[mm/min]
Four weakest sprinklers:	70, 69, 42, 52	
Average flow density:	16.46	[mm/min]
Number of sprinklers:	32	
Average sprinkler height:	10.0	[m]

Project: Rissa Omsorgsboliger
Design area: Teknisk rom loft

Level	From	To	k-factor	C-factor	Height	qv	v	Size	L	Leqv	Parts	User code	ptot start	ptot end	dpt	dp Hst	dp (dim)	dp/m (flow)
					[m]	[l/min]	[m/s]	[mm]	[m]	[m]			[mbar]	[mbar]	[mbar]	[mbar]	[mbar]	[mbar]
Sokkel	1	2		120	0.6	2159.1	1.8	159.3	1.4	3.4	1xB90		3437	3370	67	59	8	5.7
Sokkel	2	3		120	2.7	2159.1	4.0	107.1	12.4	27.4	2xB90, 2xT		3370	2714	656	203	453	36.5
Sokkel	3	4		120	2.7	184.3	0.8	70.3	45.9	61.1	4xT		2714	2631	83		83	1.8
Sokkel	3	4		120	2.7	1974.8	3.7	107.1	5.9	5.9			2714	2631	83		83	14.0
Sokkel	4	5		120	2.7	2159.1	4.0	107.1	22.0	22.0			2631	2267	364		364	16.5
Sokkel	5	6		120	10.1	2159.1	4.0	107.1	16.8	25.2	6xB90		2267	1125	1142	725	417	24.8
plan-loft	6	12		120	10.1	1959.0	3.6	107.1	2.2	2.2			1125	1095	30		30	13.8
plan-loft	6	7		120	10.1	200.1	5.2	28.5	1.0	2.5	1xT		1125	806	319		319	321.8
plan-loft	7	8	80	120	10.0	70.9	1.9	28.5	0.1	1.6	1xT		806	786	20	-10	30	300.8
plan-loft	7	9		120	10.1	129.2	3.4	28.5	2.2	2.2			806	679	127		127	57.0
plan-loft	9	10	80	120	10.0	65.1	1.7	28.5	0.1	1.6	1xT		679	663	16	-10	26	257.0
plan-loft	9	11	80	120	10.0	64.0	1.7	28.5	2.3	3.1	1xB90		679	641	38	-10	48	20.7
plan-loft	12	18		120	10.1	1761.6	3.3	107.1	2.2	2.2			1095	1071	25		25	11.4
plan-loft	12	13		120	10.1	197.4	5.2	28.5	1.0	2.5	1xT		1095	784	311		311	313.7
plan-loft	13	14	80	120	10.0	70.0	1.8	28.5	0.1	1.6	1xT		784	765	20	-10	29	293.3
plan-loft	13	15		120	10.1	127.4	3.3	28.5	2.2	2.2			784	660	124		124	55.6
plan-loft	15	16	80	120	10.0	64.2	1.7	28.5	0.1	1.6	1xT		660	645	15	-10	25	250.5
plan-loft	15	17	80	120	10.0	63.1	1.6	28.5	2.3	3.1	1xB90		660	623	37	-10	47	20.2
plan-loft	18	24		120	10.1	1566.6	2.9	107.1	2.2	2.2			1071	1051	20		20	9.1
plan-loft	18	19		120	10.1	195.1	5.1	28.5	1.0	2.5	1xT		1071	766	304		304	307.0
plan-loft	19	20	80	120	10.0	69.2	1.8	28.5	0.1	1.6	1xT		766	747	19	-10	29	287.1
plan-loft	19	21		120	10.1	125.9	3.3	28.5	2.2	2.2			766	645	121		121	54.4
plan-loft	21	22	80	120	10.0	63.5	1.7	28.5	0.1	1.6	1xT		645	630	15	-10	25	245.2
plan-loft	21	23	80	120	10.0	62.4	1.6	28.5	2.3	3.1	1xB90		645	609	36	-10	46	19.7
plan-loft	24	30		120	10.1	1373.4	2.5	107.1	1.2	1.2			1051	1042	9		9	7.2
plan-loft	24	25		120	10.1	193.2	5.0	28.5	1.0	2.5	1xT		1051	752	299		299	301.6
plan-loft	25	26	80	120	10.0	68.5	1.8	28.5	0.1	1.6	1xT		752	733	18	-10	28	282.1
plan-loft	25	27		120	10.1	124.7	3.3	28.5	2.2	2.2			752	632	119		119	53.4
plan-loft	27	28	80	120	10.0	62.9	1.6	28.5	0.1	1.6	1xT		632	618	14	-10	24	240.9
plan-loft	27	29	80	120	10.0	61.8	1.6	28.5	2.3	3.1	1xB90		632	597	35	-10	45	19.4
plan-loft	30	31		120	10.1	223.7	1.6	54.5	1.1	4.0	1xT		1042	1015	27		27	23.6
plan-loft	30	37		120	10.1	1149.7	2.1	107.1	1.1	1.1			1042	1037	5		5	5.2
plan-loft	31	32		120	10.1	223.7	3.4	37.2	0.3	1.8	1xB90		1015	939	76		76	277.6
plan-loft	32	34		120	10.1	148.0	2.3	37.2	1.1	1.1			939	917	21		21	20.0
plan-loft	32	33	80	120	10.0	75.7	2.0	28.5	0.3	2.5	1xB90, 1xT		939	895	44	-10	54	206.2
plan-loft	34	36	80	120	10.0	73.2	1.9	28.5	2.2	4.5	1xB90, 1xT		917	837	80	-10	90	40.2
plan-loft	34	35	80	120	10.0	74.8	2.0	28.5	0.3	2.5	1xB90, 1xT		917	875	43	-10	52	201.9
plan-loft	37	43		120	10.1	957.8	1.8	107.1	2.1	2.1			1037	1029	8		8	3.7
plan-loft	37	38		120	10.1	191.9	5.0	28.5	1.0	2.5	1xT		1037	741	295		295	297.8
plan-loft	38	39	80	120	10.0	68.0	1.8	28.5	0.1	1.6	1xT		741	723	18	-10	28	278.5
plan-loft	38	40		120	10.1	123.8	3.2	28.5	2.2	2.2			741	624	118		118	52.7
plan-loft	40	41	80	120	10.0	62.5	1.6	28.5	0.1	1.6	1xT		624	610	14	-10	24	237.8
plan-loft	40	42	80	120	10.0	61.4	1.6	28.5	2.3	3.1	1xB90		624	589	35	-10	45	19.1
plan-loft	43	53		120	10.1	766.7	1.4	107.1	3.9	6.7	2xB90		1029	1013	16		16	4.2
plan-loft	43	48		120	10.1	191.2	5.0	28.5	1.0	2.5	1xT		1029	736	293		293	295.7
plan-loft	44	45		120	10.1	387.6	2.8	54.5	4.4	7.3	1xT		1011	876	135		135	30.8
plan-loft	44	55		120	10.1	302.8	0.6	107.1	2.6	2.6			1011	1010	1		1	0.4
plan-loft	45	64		120	10.1	247.0	2.8	43.1	2.7	5.1	1xT		876	748	128		128	48.1
plan-loft	45	46		120	10.1	140.6	2.2	37.2	0.9	3.3	1xT		876	815	61		61	64.4
plan-loft	46	47	80	120	10.0	69.2	1.8	28.5	2.7	4.2	1xT		815	749	66	-10	76	28.0
plan-loft	46	63	80	120	10.0	71.3	1.9	28.5	0.1	1.6	1xT		815	794	21	-10	30	303.2
plan-loft	48	49	80	120	10.0	67.8	1.8	28.5	0.1	1.6	1xT		736	718	18	-10	28	276.6
plan-loft	48	50		120	10.1	123.4	3.2	28.5	2.2	2.2			736	619	117		117	52.4
plan-loft	50	51	80	120	10.0	62.2	1.6	28.5	0.1	1.6	1xT		619	605	14	-10	24	236.1
plan-loft	50	52	80	120	10.0	61.1	1.6	28.5	2.3	3.1	1xB90		619	584	35	-10	44	19.0
plan-loft	53	44		120	10.1	690.4	1.3	107.1	0.9	0.9			1013	1011	2		2	2.0
plan-loft	53	54	80	120	10.0	76.2	2.0	28.5	3.8	5.3	1xT		1013	908	104	-10	114	30.0
plan-loft	55	56	80	120	10.0	76.1	2.0	28.5	3.8	5.3	1xT		1010	906	104	-10	114	29.9
plan-loft	55	57		120	10.1	226.7	0.4	107.1	3.5	3.5			1010	1009	1		1	0.3
plan-loft	57	58	80	120	10.0	76.1	2.0	28.5	3.8	5.3	1xT		1009	905	104	-10	114	29.8
plan-loft	57	59		120	10.1	150.6	0.6	70.3	2.4	2.4			1009	1006	2		2	0.9
plan-loft	59	61		120	10.1	75.3	0.3	70.3	2.6	2.6			1006	1006	1		1	0.3
plan-loft	59	60	80	120	10.0	75.3	2.0	28.5	3.9	6.2	1xB90, 1xT		1006	886	120	-10	130	33.2

plan-loft	61	62	80	120	10.0	75.3	2.0	28.5	3.9	6.2	1xB90, 1xT		1006	886	120	-10	130	33.2
plan-loft	64	66		120	10.1	178.7	2.7	37.2	3.4	3.4			748	652	97		97	28.4
plan-loft	64	65	80	120	10.0	68.4	1.8	28.5	0.1	1.6	1xT		748	730	18	-10	28	280.4
plan-loft	66	68		120	10.1	114.8	3.0	28.5	2.4	2.4			652	542	110		110	45.9
plan-loft	66	67	80	120	10.0	63.8	1.7	28.5	0.1	1.6	1xT		652	637	15	-10	25	247.2
plan-loft	68	70	80	120	10.0	56.6	1.5	28.5	2.7	4.2	1xT		542	500	42	-10	52	19.3
plan-loft	68	69	80	120	10.0	58.3	1.5	28.5	0.1	1.6	1xT		542	531	11	-10	21	208.8

Project: Rissa Omsorgsboliger
Design area: Teknisk rom loft

Level	Node	Product	Size	k-fact	Height [m]	qv dim [l/min]	pt (req) [mbar]	pt (act) [mbar]	dpt [mbar]	Area [m²]	fd (req) [mm/min]	fd (act) [mm/min]	dfd [mm/min]
plan-loft	8	SP-15-K80-68DGR-STD	15 (l	80	10.0	70.9	500	786	+286	4.0		17.73	
plan-loft	10	SP-15-K80-68DGR-STD	15 (l	80	10.0	65.1	500	663	+163	4.0		16.29	
plan-loft	11	SP-15-K80-68DGR-STD	15 (l	80	10.0	64.0	500	641	+141	4.0		16.01	
plan-loft	14	SP-15-K80-68DGR-STD	15 (l	80	10.0	70.0	500	765	+265	4.0		17.49	
plan-loft	16	SP-15-K80-68DGR-STD	15 (l	80	10.0	64.3	500	645	+145	4.0		16.06	
plan-loft	17	SP-15-K80-68DGR-STD	15 (l	80	10.0	63.1	500	623	+123	4.0		15.79	
plan-loft	20	SP-15-K80-68DGR-STD	15 (l	80	10.0	69.2	500	747	+247	4.0		17.29	
plan-loft	22	SP-15-K80-68DGR-STD	15 (l	80	10.0	63.5	500	630	+130	4.0		15.88	
plan-loft	23	SP-15-K80-68DGR-STD	15 (l	80	10.0	62.4	500	609	+109	4.0		15.60	
plan-loft	26	SP-15-K80-68DGR-STD	15 (l	80	10.0	68.5	500	733	+233	4.0		17.13	
plan-loft	28	SP-15-K80-68DGR-STD	15 (l	80	10.0	62.9	500	618	+118	4.0		15.72	
plan-loft	29	SP-15-K80-68DGR-STD	15 (l	80	10.0	61.8	500	597	+97	4.0		15.45	
plan-loft	33	SP-15-K80-68DGR-STD	15 (l	80	10.0	75.7	500	895	+395	4.0		18.92	
plan-loft	35	SP-15-K80-68DGR-STD	15 (l	80	10.0	74.8	500	875	+375	4.0		18.70	
plan-loft	36	SP-15-K80-68DGR-STD	15 (l	80	10.0	73.2	500	837	+337	4.0		18.30	
plan-loft	39	SP-15-K80-68DGR-STD	15 (l	80	10.0	68.0	500	723	+223	4.0		17.01	
plan-loft	41	SP-15-K80-68DGR-STD	15 (l	80	10.0	62.5	500	610	+110	4.0		15.62	
plan-loft	42	SP-15-K80-68DGR-STD	15 (l	80	10.0	61.4	500	589	+89	4.0		15.35	
plan-loft	47	SP-15-K80-68DGR-STD	15 (l	80	10.0	69.3	500	749	+249	4.0		17.31	
plan-loft	49	SP-15-K80-68DGR-STD	15 (l	80	10.0	67.8	500	718	+218	4.0		16.95	
plan-loft	51	SP-15-K80-68DGR-STD	15 (l	80	10.0	62.2	500	605	+105	4.0		15.56	
plan-loft	52	SP-15-K80-68DGR-STD	15 (l	80	10.0	61.2	500	584	+84	4.0		15.29	
plan-loft	54	SP-15-K80-68DGR-STD	15 (l	80	10.0	76.2	500	908	+408	4.3		17.65	
plan-loft	56	SP-15-K80-68DGR-STD	15 (l	80	10.0	76.1	500	906	+406	4.3		17.62	
plan-loft	58	SP-15-K80-68DGR-STD	15 (l	80	10.0	76.1	500	905	+405	4.3		17.61	
plan-loft	60	SP-15-K80-68DGR-STD	15 (l	80	10.0	75.3	500	886	+386	4.3		17.43	
plan-loft	62	SP-15-K80-68DGR-STD	15 (l	80	10.0	75.3	500	886	+386	4.3		17.43	
plan-loft	63	SP-15-K80-68DGR-STD	15 (l	80	10.0	71.3	500	794	+294	4.3		16.51	
plan-loft	65	SP-15-K80-68DGR-STD	15 (l	80	10.0	68.4	500	730	+230	4.3		15.82	
plan-loft	67	SP-15-K80-68DGR-STD	15 (l	80	10.0	63.8	500	637	+137	4.3		14.78	
plan-loft	69	SP-15-K80-68DGR-STD	15 (l	80	10.0	58.3	500	531	+31	4.3		13.49	
plan-loft	70	SP-15-K80-68DGR-STD	15 (l	80	10.0	56.6	500	500	0	4.3		13.09	