

# Prilog 10

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## Supplement / Prilog

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Builder : Sprinkler d.o.o. Vocarska cesta 112 Zagreb		Mode of operation : 3. kat Kind of system : <input checked="" type="checkbox"/> wet system <input type="checkbox"/> dry system <input type="checkbox"/> fast dry system <input type="checkbox"/> prior driven dry system <input type="checkbox"/> tandem system		BG : OH2 Effective area: <input type="checkbox"/> favourable <input checked="" type="checkbox"/> least favourable Demand : <input checked="" type="checkbox"/> pressure at sprinkler <input type="checkbox"/> pump pressure	
Operator : Sprinkler d.o.o.		Roughness of pipes (C-value) 20		Use of pipes according to DIN 2440	
Project-No.: 418-14		Operating company :		l/min at node No. Strangrohr-No. : 0 ; Sprinkler-No. : 0	
Person in charge : BS		Height of storage (m) min. water admission (mm/min) real effective area (ea) (m²) max. protection area/sprinkler in ea (m²) No. of sprinklers / effecton area		Ceiling protec. Rack protec. 3,70 8,10 143,50 12,10 16	
Date : 11.2014.		Object : TC Trogir		No. of additional sprinkler / effecton area hydraulic considered no. of sprinkler no. of protected decks biggest distance of sprinkler (m)	

Demand press required / Supply press available / cushion	[bar]	5,045	5,858	0,813	according Hazen-Williams
Water rate at point to feed in / Pump	[l/min]	1202,32	1372,52		
hydraulic unfavourabelst sprinkler in the effective area					
No. of pipe / Sprinkler-No.		1 / 3			
minimum pressure / Required density	[bar]	0,825	72,657		
geodetic difference in height sprinkler - point to feed	[m]	22,40			
geodetic difference in height lowest sprinkler - point to feed	[m]	22,40			
max. pressure of sprinkler in the effective area	[bar]	1,415			
min. pressure of sprinkler in the effective area	[bar]	0,825			
max. water speed in the effective area	[m/s]	3,25			
No. of sprinkler in the effective area		16			

Name	Beg- node	End- node	P <sub>beg</sub> [bar]	K	Q <sub>sprinkler</sub> [l/min]	Q <sub>strang</sub> [l/min]	dia- meter	C-Value	length of pipe [m]	Fittings BWT/TAV/NAV/SV/K kind and no	hydraulic total length [m]	Δ p friction [bar/m]	difference in height [m]	Δ p total [bar]	P <sub>end</sub> [bar]	v [m/s]	remarks
Z 2-1	58	59	4,929			1202,3	150	120	3,00	1B+ 1S+ 1K	16,30	0,0011	1,00	0,1158	5,045	1,13	
Z 1-1	58	57	4,929			-1202,3	150	120	12,00	6B+ 1T+ 1S+ 1K	47,90	-0,0011	-1,80	-0,0520	4,877	1,13	
H 1-1	57	56	4,877			-1202,3	150	120	1,80	1T+ 1S+ 1V	22,70	-0,0011	-19,60	-2,5909	2,085	2,51	
V 4-1	56	55	4,676			-1202,3	100	120	60,00	16B	88,80	-0,0075	-0,1335	-0,0023	1,479	1,15	
V 3-1	54	53	1,612			-362,3	80	120	43,50	4B+ 2T	58,70	-0,0075	-0,4725	-0,0071	1,605	1,75	
V 2-11	56	54	2,085			-1202,3	100	120	46,60	9B	62,80	-0,0039	-0,0098	-0,0098	1,595	1,66	
V 2-10	54	52	1,612			-840,0	100	120	1,82		1,82	-0,0035	-0,0088	-0,0078	1,587	1,47	
V 2-9	52	50	1,605			-793,3	100	120	2,80		2,80	-0,0025	-0,0069	-0,0069	1,572	1,38	
V 2-8	50	48	1,595			-747,9	100	120	2,80		2,80	-0,0022	-0,0202	-0,0202	1,552	1,29	
V 2-7	48	46	1,587			-703,6	100	120	2,80		2,80	-0,0019	-0,0070	-0,0070	1,545	1,21	
V 2-6	46	44	1,579			-660,1	100	120	2,80		2,80	-0,0016	-0,0035	-0,0035	1,541	1,08	
V 2-5	44	42	1,572			-617,0	100	120	5,60	2B	9,20	-0,0007	-0,0022	-0,0022	1,539	0,72	
V 2-4	42	40	1,552			-577,6	100	120	3,60		3,60	-0,0002	-0,0006	-0,0006	1,538	0,36	
V 2-3	40	36	1,545			-515,5	100	120	2,25		2,25	-0,0008	-0,0015	-0,0015	1,477	0,76	
V 2-2	36	24	1,541			-343,6	100	120	3,00		3,00	-0,0010	-0,0029	-0,0029	1,474	0,85	
V 2-1	24	12	1,539			-171,8	100	120	3,00		3,00	-0,0012	-0,0035	-0,0035	1,471	0,95	
V 1-10	53	51	1,479			-362,3	100	120	1,82		1,82	-0,0015	-0,0041	-0,0041	1,467	1,04	
V 1-9	51	49	1,477			-409,0	100	120	2,80		2,80	-0,0017	-0,0048	-0,0048	1,462	1,13	
V 1-8	49	47	1,474			-454,4	100	120	2,80		2,80	-0,0020	-0,0064	-0,0064	1,455	1,22	
V 1-7	47	45	1,471			-498,7	100	120	2,80		2,80	-0,0022	-0,0081	-0,0081	1,447	1,30	
V 1-6	45	43	1,467			-542,2	100	120	2,80		2,80	-0,0020	-0,0046	-0,0046	1,443	1,24	
V 1-5	43	41	1,462			-585,3	100	120	3,20		3,20	-0,0020	-0,0029	-0,0029	1,440	0,82	
V 1-4	41	37	1,455			-624,7	100	120	3,60		3,60	-0,0010	-0,0008	-0,0008	1,439	0,41	
V 1-3	37	25	1,447			-591,6	100	120	2,25		2,25	-0,0003	-0,0028	-0,0028	1,439	0,41	
V 1-2	25	13	1,443			-394,3	100	120	3,00		3,00	-0,0027	-0,1211	-0,1211	1,474	0,75	
V 1-1	13	1	1,440			-197,1	100	120	3,00		3,00	-0,0026	-0,1158	-0,1158	1,471	0,73	
R 10-1	52	51	1,605			-46,7	32	120	40,50	2B+ 2T	45,30	-0,0025	-0,1121	-0,1121	1,467	0,72	
R 9-1	50	49	1,595			-45,4	32	120	40,50	2B+ 2T	45,30	-0,0025	-0,1121	-0,1121	1,467	0,72	
R 8-1	48	47	1,587			-44,3	32	120	40,50	2B+ 2T	45,30	-0,0025	-0,1121	-0,1121	1,467	0,72	
R 7-1	46	45	1,579			-43,5	32	120	40,50	2B+ 2T	45,30	-0,0025	-0,1121	-0,1121	1,467	0,72	

Calculation of pressure loss:

Name of project : 418-14

No. of protection area : 1

Date : 11.2014.

Name	Beg- node	End- node	Pwg [bar]	K	Q <sub>spinifer</sub> [l/min]	Q <sub>sang</sub> [l/min]	dia- meter	C-Value	length of pipe [m]	Fittings BW/TTAVNAV/SVVK kind and no	hydraulic total length [m]	Δ p friction [bar/m]	difference in height [m]	Δ p total [bar]	Pend [bar]	v [m/s]	remarks
R 6-1	44	43	1,572			-43,1	32	120	40,50	2B+2T	45,30	-0,0024		-0,1100	1,462	0,71	
R 5-1	42	41	1,552			-39,5	32	120	43,00	2T	46,60	-0,0021		-0,0862	1,455	0,65	
R 4-2	40	38	1,545			-62,1	32	120	25,30	1T	27,10	-0,0048		-0,1294	1,415	1,02	
R 4-S1	39	38	1,415	80,00	95,2		15	120							1,415		
R 4-1	38	37	1,415			33,1	32	120	18,50	2B+1T	21,50	0,0015		0,0321	1,447	0,54	
R 3-6	36	34	1,541			-171,9	32	120	19,60	1T	21,40	-0,0314		-0,6725	0,869	2,83	
R 3-S1	35	34	0,868	80,00	74,6		15	120							0,869		
R 3-5	34	32	0,869			-97,4	32	120	2,40	2B	3,60	-0,0110		-0,0395	0,829	1,60	
R 3-S1	33	32	0,829	80,00	72,8		15	120							0,829		
R 3-4	32	30	0,829			-24,5	32	120	2,60		2,60	-0,0009		-0,0022	0,827	0,40	
R 3-S1	31	30	0,827	80,00	72,7		15	120							0,827		
R 3-3	30	28	0,827			48,2	32	120	3,80		3,80	0,0030		0,0114	0,838	0,79	
R 3-S1	29	28	0,838	80,00	73,2		15	120							0,838		
R 3-2	28	26	0,838			121,5	32	120	3,80		3,80	0,0165		0,0628	0,901	2,00	
R 3-S1	27	26	0,901	80,00	75,9		15	120							0,901		
R 3-1	26	25	0,901			197,4	32	120	11,55	1T	13,35	0,0406		0,5418	1,443	3,25	
R 2-6	24	22	1,539			-171,8	32	120	19,60	1T	21,40	-0,0314		-0,6718	0,867	2,83	
R 2-S1	23	22	0,867	80,00	74,5		15	120							0,867		
R 2-5	22	20	0,867			-97,3	32	120	2,40	2B	3,60	-0,0110		-0,0395	0,828	1,60	
R 2-S1	21	20	0,827	80,00	72,8		15	120							0,828		
R 2-4	20	18	0,828			-24,6	32	120	2,60		2,60	-0,0009		-0,0022	0,825	0,40	
R 2-S1	19	18	0,825	80,00	72,7		15	120							0,825		
R 2-3	18	16	0,825			48,1	32	120	3,80		3,80	0,0030		0,0113	0,837	0,79	
R 2-S1	17	16	0,837	80,00	73,2		15	120							0,837		
R 2-2	16	14	0,837			121,3	32	120	3,80		3,80	0,0165		0,0626	0,899	2,00	
R 2-S1	15	14	0,899	80,00	75,9		15	120							0,899		
R 2-1	14	13	0,899			197,2	32	120	11,55	1T	13,35	0,0405		0,5406	1,440	3,25	
R 1-6	12	10	1,538			-171,8	32	120	19,60	1T	21,40	-0,0314		-0,6716	0,867	2,83	
R 1-S1	11	10	0,867	80,00	74,5		15	120							0,867		
R 1-5	10	8	0,867			-97,3	32	120	2,40	2B	3,60	-0,0110		-0,0395	0,827	1,60	

Name	Beg- node	End- node	P <sub>beg</sub> [bar]	K	Q <sub>design</sub> [l/min]	Q <sub>design</sub> [l/min]	dis- meter	C-Value	length of pipe [m]	Fittings BWW/IT/TA/VNAV/SA/K kind and no	hydraulic total length [m]	$\Delta p$ friction [bar/m]	difference in height [m]	$\Delta p$ total [bar]	Pend [bar]	v [m/s]	remarks
R 1-S1	9	8	0,827	80,00	72,8	72,8	15	120							0,827		
R 1-4	8	6	0,827			-24,6	32	120	2,60		2,60	-0,0009		-0,0022	0,825	0,40	
R 1-S1	7	6	0,825	80,00	72,7	72,7	15	120							0,825		
R 1-3	6	4	0,825			48,1	32	120	3,80		3,80	0,0030		0,0113	0,836	0,79	
R 1-S1	5	4	0,836	80,00	73,2	73,2	15	120							0,836		
R 1-2	4	2	0,836			121,3	32	120	3,80		3,80	0,0165		0,0626	0,899	2,00	
R 1-S1	3	2	0,899	80,00	75,8	75,8	15	120							0,899		
R 1-1	2	1	0,899			197,1	32	120	11,55	1T	13,35	0,0405		0,5402	1,439	3,25	