



SWIMMING POOL/SPA HYDRAULIC DESIGN GUIDELINES

TDH (skimmer pool with sand filter)

FEET FROM DRAIN:	1 – 25	26 – 50	51 – 75	76 – 100	101 – 125	126 - 150
HEAD (FT):	55	60	65	70	75	80

MAX FLOW RATES (PVC: C=140)

PIPE SIZE (IN):	1.25	1.5	2.0	2.5	3.0	4.0	6.0
PRESS SIDE (GPM):	25	60	90	140	220	350	800
SUCT. SIDE (GPM):	15	35	50	80	130	220	450

MAX VELOCITIES

PRESSURE SIDE - 10ft/sec **SUCTION SIDE** – 6 ft/sec

TURNOVER RATES

SPA – 30 MIN **SWIMMING POOL** – 8 HRS **WADING POOL** – 1 HR

NUMBER OF SKIMMERS REQUIRED

SPA, WADING POOL: 1 skimmer per 200 ft²

SWIMMING POOL: 1 skimmer per 400 ft² (min. of 2 skimmers)

3 OR MORE SKIMMERS REQUIRES A CLOSED LOOP

MINIMUM PIPE SIZES (BASED ON SKIMMER FLOW CONTROLLING)

	<u>main drain</u>	<u>skimmer</u>	<u>return</u>	<u>flow (gpm)</u>
2 skimmer	1.5"	2"	1.5"	54
3 skimmer	2"	2.5"	2"	81
4 skimmer	2.5"	3"	2.5"	108
5 skimmer	2.5"	3"	3"	135
6 skimmer	3"	4"	3"	162

NUMBER OF RETURNS (INLETS) REQUIRED

(SWIMMING POOLS – 6 MINIMUM ON CLOSED LOOP; SPA, WADING POOL – 1 PER 15 LF OF PERIPHERY; 3 OR MORE REQUIRES CLOSED LOOP)

PERIMETER:	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315
# RETURNS:	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

ALL PIPING MUST PASS A PRESSURE TEST @ 25 PSI FOR 30 MIN



ENVIRONMENTAL SERVICES DEPARTMENT
Swimming Pool Plan Review and Construction



1 W K 6 W
3 R I Q L [\$ =
Phone (602) 506-0070 FAX (602) 506-1837
PoolPlanReview@Mail.Maricopa.Gov

Environmental Services
Department

SWIMMING POOL/SPA HYDRAULIC DESIGN GUIDELINES

TDH (skimmer pool with sand filter)

FEET FROM DRAIN:	1 – 25	26 – 50	51 – 75	76 – 100	101 – 125	126 - 150
HEAD (FT):	55	60	65	70	75	80

MAX FLOW RATES (PVC: C=140)

PIPE SIZE (IN):	1.25	1.5	2.0	2.5	3.0	4.0	6.0
PRESS SIDE (GPM):	25	60	90	140	220	350	800
SUCT. SIDE (GPM):	15	35	50	80	130	220	450

MAX VELOCITIES

PRESSURE SIDE - 10ft/sec **SUCTION SIDE** – 6 ft/sec

TURNOVER RATES

SPA – 30 MIN **SWIMMING POOL** – 8 HRS **WADING POOL** – 1 HR

NUMBER OF SKIMMERS REQUIRED

SPA, WADING POOL: 1 skimmer per 200 ft²

SWIMMING POOL: 1 skimmer per 400 ft² (min. of 2 skimmers)

3 OR MORE SKIMMERS REQUIRES A CLOSED LOOP

MINIMUM PIPE SIZES (BASED ON SKIMMER FLOW CONTROLLING)

	<u>main drain</u>	<u>skimmer</u>	<u>return</u>	<u>flow (gpm)</u>
2 skimmer	1.5"	2"	1.5"	54
3 skimmer	2"	2.5"	2"	81
4 skimmer	2.5"	3"	2.5"	108
5 skimmer	2.5"	3"	3"	135
6 skimmer	3"	4"	3"	162

NUMBER OF RETURNS (INLETS) REQUIRED

(SWIMMING POOLS – 6 MINIMUM ON CLOSED LOOP; SPA, WADING POOL – 1 PER 15 LF OF PERIPHERY; 3 OR MORE REQUIRES CLOSED LOOP)

PERIMETER:	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315
# RETURNS:	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

ALL PIPING MUST PASS A PRESSURE TEST @ 25 PSI FOR 30 MIN