

INLETS

$$\text{NUMBER OF INLETS} = \text{PERIMETER} / X$$

NUMBER OF INLETS = _____ = _____ ROUND TO NEXT WHOLE NUMBER

FOR POOLS X = 15 FEET

FOR WADING POOLS AND SPAS X = 10 FEET

SKIMMERS

FOR POOLS: ONE SKIMMER REQUIRED FOR EVERY 500SF OF SURFACE AREA OR FRACTION THEREOF

FOR SPAS: ONE SKIMMER REQUIRED FOR EVERY 100SF OF SURFACE AREA.

SURFACE AREA OF POOL _____
NUMBER OF SKIMMERS REQUIRED _____
NUMBER OF SKIMMERS PROVIDED _____

SKIMMER FLOW RATE

WALL RETURNS

$$\text{SKIMMER FLOW} = \text{DFR} \times 0.8$$

= _____ X 0.8 = _____ GPM

FLOOR RETURNS

$$\text{SKIMMER FLOW} = \text{DFR} = \text{_____ GPM}$$

FLOW THROUGH EACH SKIMMER

SKIMMER FLOW (from above) = _____ GPM = _____ GPM
#SKIMMERS PROVIDED

MUST BE AT LEAST 30GPM

PIPE SIZE SELECTION

SKIMMER LINE SIZE

SELECT PIPE SIZE THAT GIVES MAX. 6 FPS VELOCITY AT SKIMMER FLOW RATE.

	BRANCHES						
	1	2	3	4	5	6	7
NUMBER OF SKIMMERS SERVED BY PIPE							
PIPE SIZE							
FLOW IN PIPE							
VELOCITY (FPS)							

RETURN LINE SIZE

SELECT PIPE SIZE THAT GIVES MAX. 10 FPS VELOCITY AT DFR.

	BRANCHES						
	1	2	3	4	5	6	7
NUMBER OF INLETS SERVED BY PIPE							
PIPE SIZE							
FLOW IN PIPE							
VELOCITY (FPS)							

MAIN DRAIN SIZE

SELECT PIPE SIZE THAT GIVES MAX. 6 FPS VELOCITY AT DFR.

DFR: _____

PIPE SIZE: _____

VELOCITY: _____

MAIN DRAIN GRATE SELECTION

TWO OUTLETS REQUIRED.

THERE MUST BE A 4:1 OPEN AREA RATIO FOR EACH DRAIN OR 1.5FPS MAXIMUM VELOCITY THROUGH EACH DRAIN GRATE. IF FEATURE FLOW IS THROUGH THESE DRAINS THIS MUST ALSO BE CALCULATED. IF FEATURE FLOW IS THROUGH ADDITIONAL DRAINS, THESE DRAINS MUST LISTED.

PIPE SIZE: _____ GRATE SIZE: _____

FLOW AREA (EACH): _____ VELOCITY: _____

TOTAL FLOW, BOTH DRAINS (DFR): _____

OPEN PIPE AREA _____ X 4 = _____ < _____ OPEN GRATE AREA

FRAME AND GRATE CATALOG NUMBER _____ QUANTITY _____

MAIN DRAIN LINE LOSS

WALL RETURNS: HEAD LOSS CALCULATIONS MUST BE BASED ON:

MAIN DRAIN FLOW RATE = 0.2 x DFR

MAIN DRAIN FLOW RATE = 0.2 x _____ GPM
= _____ GPM

STRAIGHT PIPE LENGTH (SIZE _____) = _____

_____ ELBOWS X EQUIV. LENGTH _____ = _____

_____ TEES X EQUIV. LENGTH _____ = _____

_____ VALVES X EQUIV. LENGTH _____ = _____

TOTAL EQUIVALENT LENGTH = _____

FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =
(ENTER ON PAGE 11)

FLOOR RETURNS

SKIMMER FLOW RATE = DFR

MAIN DRAIN FLOW RATE = 0

MAIN DRAIN HEAD LOSS = 0 (ENTER ON PAGE 11)

CALCULATE RETURN LINE LOSS

STATE WHICH CHART USED: Williams and Hazen

BRANCH 1

PIPE SIZE	<u>3"</u>	@ GPM	_____	PIPE LENGTH	=	_____
	_____	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 2

PIPE SIZE	_____	@ GPM	_____	PIPE LENGTH	=	_____
	_____	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 3

PIPE SIZE	_____	@ GPM	_____	PIPE LENGTH	=	_____
	_____	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 4

PIPE SIZE 2" @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 5

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 6

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 7

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ 1.00 ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

FRICTION LOSS DUE TO INLET RESISTANCE AT _____ GPM = FEET

TOTAL RETURN LINE FRICTION LOSS = _____ FEET
(ENTER ON PAGE 11)

CALCULATE SKIMMER LINE LOSS

STATE WHICH CHART USED: Williams and Hazen

BRANCH 1

PIPE SIZE	_____	@ GPM	_____	PIPE LENGTH	=	_____
	_____	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 2

PIPE SIZE	_____	@ GPM	_____	PIPE LENGTH	=	_____
	_____	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 3

PIPE SIZE	<u>2"</u>	@ GPM	_____	PIPE LENGTH	=	_____
	<u>1.00</u>	ELBOWS X EQUIV. LENGTH	_____		=	_____
	_____	TEES X EQUIV. LENGTH	_____		=	_____
	_____	VALVES X EQUIV. LENGTH	_____		=	_____
		TOTAL EQUIVALENT LENGTH			=	_____
FRICITION LOSS PER 100FT	_____	X TOT EQ LENGTH	_____	/100 =		<input type="text"/>

BRANCH 4

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 5

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 6

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

BRANCH 7

PIPE SIZE _____ @ GPM _____ PIPE LENGTH = _____
_____ ELBOWS X EQUIV. LENGTH _____ = _____
_____ TEES X EQUIV. LENGTH _____ = _____
_____ VALVES X EQUIV. LENGTH _____ = _____
TOTAL EQUIVALENT LENGTH = _____
FRICTION LOSS PER 100FT _____ X TOT EQ LENGTH _____ /100 =

FRICTION LOSS OVER THE WEIR AT _____ GPM = FEET

TOTAL SKIMMER LINE FRICTION LOSS = _____ FEET
(ENTER ON PAGE 11)

TOTAL DYNAMIC HEAD (TDH) REQUIRED

MAIN DRAIN LINE LOSS = _____ FEET (PAGE 4)
RETURN LINE LOSS = _____ FEET (PAGE 7)
FILTER LOSS (WHEN DIRTY)= _____ FEET (FROM BELOW)
SKIMMER LINE LOSS = _____ FEET (PAGE 10)
HEATER LOSS = _____ FEET (PER MANUFACTURER)
OTHER (MULTIPOINT, ETC.) = _____ FEET (PER MANUFACTURER)
TDH = _____ FEET

FILTER LOSS WHEN DIRTY
CARTRIDGE FILTER = 23.1 FT PRESSURE D.E. = 57.8
SAND FILTER = 34.7 FT VACUUM D.E. = 4.3

PUMP SELECTION (SUBMIT CURVE)

MAKE: _____ MODEL: _____
HORSEPOWER: _____ NUMBER OF PUMPS: _____
_____ GPM @ TDH _____

FILTER SELECTION (SUBMIT SPECIFICATIONS)

FILTER AREA REQUIRED = DFR/FLOW RATE PER SF

FILTER AREA = _____ / _____ = _____
FLOW RATE PER SF: D.E. = 2 GPM PER SF CARTRIDGE = 0.33 GPM PER SF
HIGH RATE SAND = 15 GPM PER SF

FILTER AREA: _____ NUMBER OF TANKS: _____

SIZE: _____

CATALOG: _____ MODEL: _____