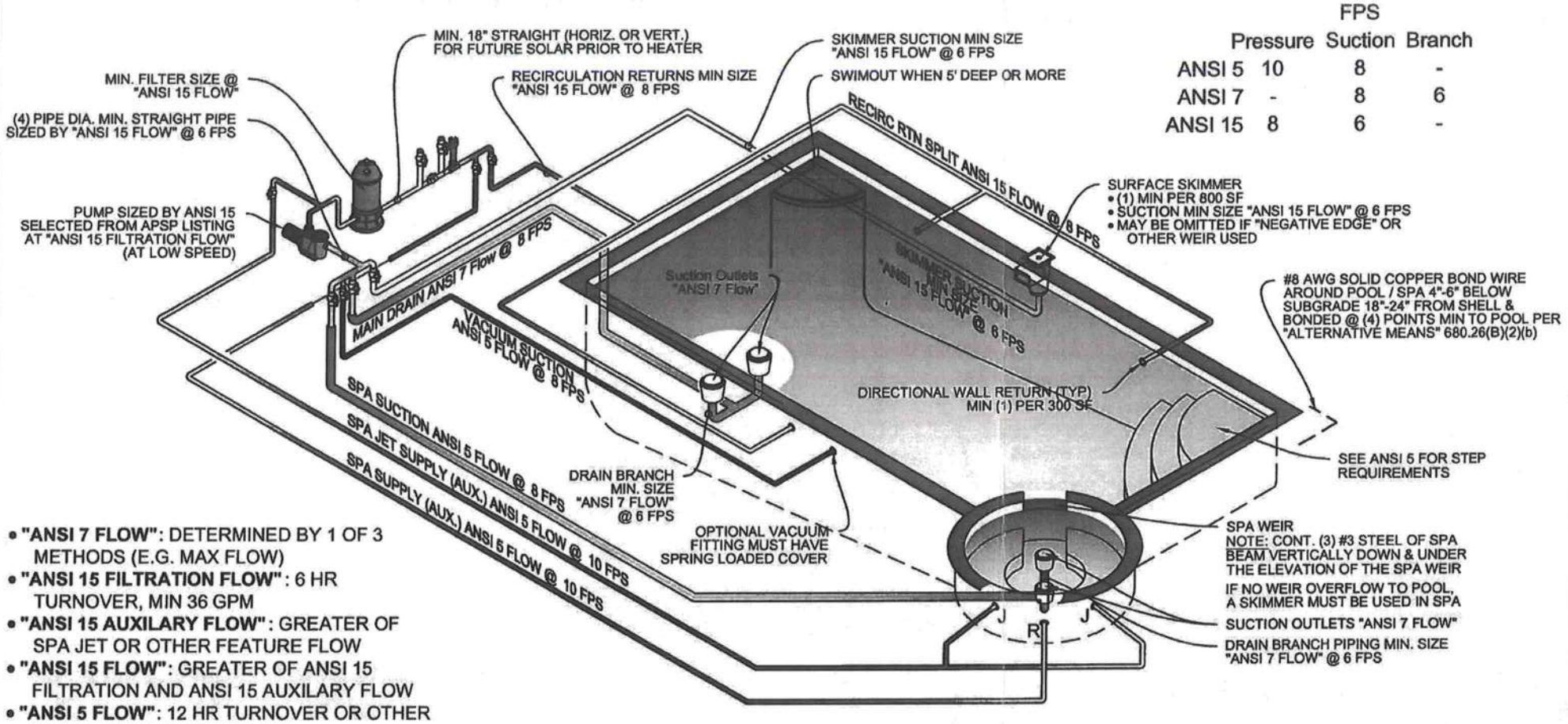
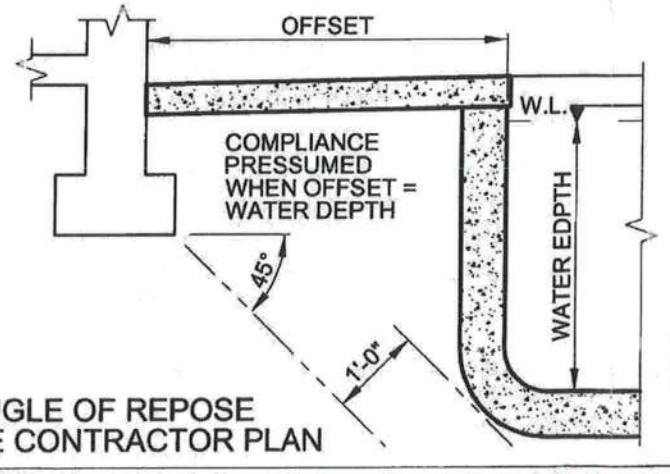


	FPS		
	Pressure	Suction	Branch
ANSI 5	10	8	-
ANSI 7	-	8	6
ANSI 15	8	6	-

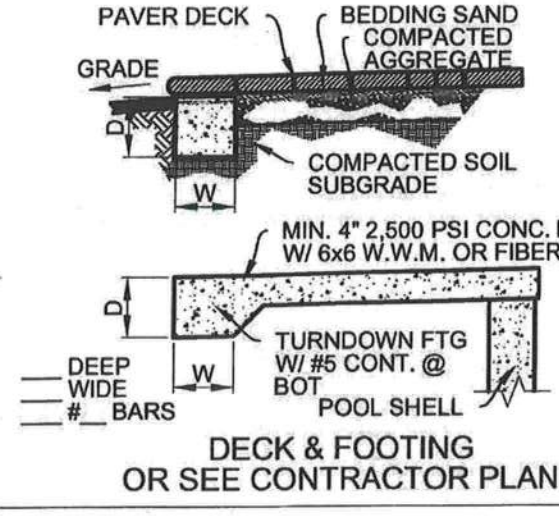
- **"ANSI 7 FLOW"**: DETERMINED BY 1 OF 3 METHODS (E.G. MAX FLOW)
- **"ANSI 15 FILTRATION FLOW"**: 6 HR TURNOVER, MIN 36 GPM
- **"ANSI 15 AUXILARY FLOW"**: GREATER OF SPA JET OR OTHER FEATURE FLOW
- **"ANSI 15 FLOW"**: GREATER OF ANSI 15 FILTRATION AND ANSI 15 AUXILARY FLOW
- **"ANSI 5 FLOW"**: 12 HR TURNOVER OR OTHER "ESTIMATED/ DESIGN" FLOW

PIPE FLOW AT GIVEN VELOCITY (GPM)

PIPE	6 FPS	8 FPS	10 FPS
1"	16	22	26
1-1/2"	38	51	62
2"	63	84	102
2-1/2"	90	119	146
3"	138	184	226
4"	238	317	391
6"	540	720	890



ANGLE OF REPOSE
OR SEE CONTRACTOR PLAN



DECK & FOOTING
OR SEE CONTRACTOR PLAN

EXAMPLE RESIDENTIAL POOL / SPA SCHEMATIC PLAN & NOTES

POOL ONLY ☐
SPA ONLY ☐

SCALE: N.T.S.

NOTES:

- This plan is schematic & piping shall be connected to provide a functioning system.
- Pool piping shall hold a static water or air pressure not less than 35 psi for 15 minutes, per R4101.12.1
- Pools shall have pumps selected to provide minimum 12 hr. turnover & maximum 6 hour turnover.
- Determine pipe sizing from attached work sheets.
- Spa piping determined from attached work sheets.
- The dual main drains shall have a minimum separation of 3 ft, unless one is located on the vertical wall or a single unblockable drain is used.
- All suction covers shall meet ANSI/ASME A112.19.8-2007
- All piping shall be NSF-PW approved & meet the requirements of Florida Building Code.
- Electrical equipment, wiring, & installation shall conform to the National Electrical Code 2008 Edition
- Bonding of pool steel & light to footing steel shall be continued to & include all pumps & heaters.
- Temporary fencing shall be installed & maintained until permanent child safety features are installed.
- There shall be a passing electrical & child safety final inspection prior to filling the pool or spa with water.
- Pool shall meet the applicable criteria in ANSI/APSP 3,4,5,6, 7 & 15 standards.
- Regardless of the criteria here, the project shall comply with all sections of the FBC - Residential, Building, Mechanical, Plumbing & Gas Codes, as applicable respectively & amended.

SEE INFORMATION ATTACHED TO THIS PERMIT PACKAGE FOR SITE SPECIFIC DETAILS SHOWING ANSI 7 & 15 AND FBC COMPLIANCE

INFORMATION ON THIS SHEET COMPLIES WITH 2010 FBC INCLUDING 2010 FBC ENERGY CONSERVATION CODE

FUN STATE POOLS, INC.

KIMES ENGINEERING
AND MANAGEMENT SERVICES, INC
13410 2nd Ave. NE, Bradenton, FL 34212
Office: 941-749-0311, Fax: 941-746-7391
kent@kimesengineering.com
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JAMES KENT KIMES LICENSE NO. 33678 STATE OF FLORIDA PROFESSIONAL ENGINEER

DATE:	REVISIONS:
DWG. BY: MCM	PRINTED: 13-Apr-12
CHKD. BY: JKK	SCALE: AS NOTED
DATE: 13-Apr-12	

TYPICAL PLAN & SECTIONS FOR RESIDENTIAL POOL/SPA

S1

SHEET OF

ORIG. DWG: 17"x11" (ANSI B)

\\SBSDC\Company Shared Docs\File Cabinet-Kent\1 Pool Changes 2011 & 2012\1-2010 KE Std Eng r 4-13-12.dwg

RANGE 17 EAS

SCALE: 1" = 100'

MARCIA SUE MONG

462 SW FAIRLINGTON CT

LAKE CITY FL. 32025

INNING
F SW 1/4
F SECTION 33,
OUTH,
T.

1 OF SECTION 33, TOWNSHIP 4 SOUTH,
MORE PARTICULARLY DESCRIBED AS
E SW CORNER OF THE SW 1/4 OF THE NW
33, AND RUN THENCE N.89°02'58"E., ALONG
ID NW 1/4 A DISTANCE OF 140.00 FEET;
DISTANCE OF 657.60 FEET; THENCE
CE OF 275.95 FEET; THENCE N.10°37'23"W.,
EET; THENCE N.22°56'13"E., A DISTANCE OF
25°43'20"E., A DISTANCE OF 83.44 FEET;
DISTANCE OF OF 96.06 FEET; THENCE
E OF 165.07 FEET; THENCE N.02°28'05"E., A
ET; THENCE N.89°28'34"W., A DISTANCE OF
EST LINE OF SAID NW 1/4; THENCE
CE OF 116.28 FEET TO THE SW CORNER OF
W 1/4; THENCE S.06°02'14"W., A DISTANCE
E POINT OF BEGINNING. COLUMBIA COUNTY,
INS 10.79 ACRES, MORE OR LESS.

LUSIVL EASEMENT FOR THE PURPOSE OF
VER AND ACROSS THE EAST 30.00 FEET TO
AS MEASURED PERPENDICULARLY TO THE

BJECT TO A NON-EXCLUSIVE EASEMENT
NGRESS AND EGRESS OVER AND ACROSS
ED PROPERTY: A PART OF THE NW 1/4 OF
4 SOUTH, RANGE 17 EAST; COMMENCE AT
D SECTION 33, AND RUN THENCE
E NORTH LINE A DISTANCE OF 220.78
BEGINNING; THENCE N.89°35'53"E., A
; THENCE S.03°39'18"W., A DISTANCE OF
17°49'04"E., A DISTANCE OF 84.34 FEET;
DISTANCE OF 82.73 FEET; THENCE
E OF 170.90 FEET; THENCE S.26°41'25"E., A
T; THENCE S.10°39'58"E., A DISTANCE OF
°28'05"W., A DISTANCE OF 639.66 FEET;
DISTANCE OF 169.61 FEET; THENCE
E OF 99.39 FEET; THENCE S.25°43'20"W., A
T; THENCE S.22°56'13"W., A DISTANCE OF
0°37'23"E., A DISTANCE OF 55.62 FEET;
DISTANCE OF 411.23 FEET; THENCE
E OF 60.45 FEET; THENCE S.89°02'58"W., A
ET; THENCE N.10°37'23"W., A DISTANCE OF
22°56'13"E., A DISTANCE OF 235.48 FEET;
DISTANCE OF 82.61 FEET; THENCE
92.73 FEET; THENCE N13°01'00"E., A
; THENCE N.02°28'05"E., A DISTANCE OF

WEST LINE OF SW 1/4 OF NW 1/4
663.76' (FIELD)
S.06°02'14"W. 1332.66' (DEED)
1332.30' (FIELD)
L.E. BRITT P.L.S. 1079
N.06°03'46"E. 657.49' (FIELD)
N.06°02'14"E. 657.60' (DEED)
L.E. BRITT P.L.S. 1079
SEE INSERT "B"
N.89°03'44"E. 275.95' (FIELD)
N.89°02'58"E. 275.95' (DEED)
19.68'
18.10'
257.41'
210' ±
219.71'
217.28'
490' ±
SEE INSERT "A"
N.10°37'23"W. 124.36' (DEED)
N.22°56'13"E. 235.48' (DEED)
111.38'
149.12'
L.E. BRITT P.L.S. 1079
N.10°28'52"W. 59.61' (FIELD)
N.10°37'23"W. 59.56' (DEED)
S.10°37'23"E. 55.62' (DEED)
S.22°56'13"W. 215.93' (DEED)
N.22°42'27"E. 225.70' (FIELD)
N.22°56'13"E. 225.70' (DEED)
S.89°02'58"W. 454.49' (DEED)
N.89°02'58"E. 411.23' (DEED)
S.06°03'31"W 60.45' (DEED)
L.S. BRITT P.L.S. 5757
N.26°19'24"E. 83.44' (FIELD)
N.25°43'20"E. 83.44' (DEED)
S.25°43'20"W. 84.26' (DEED)
N.19°47'04"E 95.91' (FIELD)
N.19°47'01"E. 96.06' (DEED)
S.19°47'01"W. 99.39' (DEED)
N.35°43'20"E 82.61' (DEED)
N.13°47'01"E 92.73' (DEED)
N.13°01'00"E. 160.53' (DEED)
S.13°01'00"W. 169.61' (DEED)
N.13°01'54"E. 165.30' (FIELD)
N.13°01'00"E. 165.07' (DEED)
L.E. BRITT P.L.S. 1079
N.02°28'05"E. 627.22' (DEED)
S.02°28'05"W. 639.66' (DEED)
N.02°28'48"E. 182.52' (FIELD)
N.02°28'05"E. 182.65' (DEED)
10.30'
43.49'
L.E. BRITT P.L.S. 1079
SW CORNER OF NW 1/4 OF NW 1/4 OF SECTION 33, TOWNSHIP 4 SOUTH, RANGE 17 EAST.
NO IDENTIFICATION
22.63'
85.95'
S.06°02'14"W. 116.28' (DEED)
S.05°55'40"W. 116.44' (FIELD)
L.E. BRITT P.L.S. 1079
L.E. BRITT P.L.S. 1079
N.89°28'34"W. 523.43' (DEED)
N.89°27'58"W. 523.13' (FIELD)
N.22°35'
95.02'
N.26°41'25"W. 64.16' (DEED)
N.31°10'48"W. 182.05' (DEED)
N.10°39'58"W. 59.23' (DEED)
60' EASEMENT
S.31°10'48"E. 179.90' (DEED)
S.10°39'58"E. 74.58' (DEED)
S.26°41'25"E. 74.96' (DEED)
ASPHALT
SEPTIC TANK
16'
13.6'
13.2'
5.3'
30.6'
UNDERGROUND ELECTRIC
ONE STORY BRICK RESIDENCE
32.2'
INSERT
SCALE: 1'
L10°W 19.5'

ANSI/APSP-7 2006 Specifies three methods for determining the maximum system flow rate. The following simplified TDH calculation is one of the methods specified.

Simplified Total Dynamic Head (TDH) Calculation Worksheet

Determine Maximum System Flow Rate:

Minimum Flow Rate Required: 35 gpm Per Skimmer (Required: 1 skimmer per 800 sf of surf. area)

1. Calculate Pool Volume: 330 (Surf. Area) x 4.5 (Avg. Depth) x 7.48 (gal./cubic foot) = 11,108 (Vol. in gal.)
2. Determine preferred Turnover Time in hours: 6 (Hours) x 60 (min. / hr.) = 360 (Turnover in Min.)
3. Determine Max Flow Rate: 11,108 (Vol. in gal.) / 360 (Turnover Mins.) = 30.85 (Pool Flow Rate) + .58 (Feature Flow Rate) = 31.43 (System Flow Rate)
4. Spa Jets: _____ (No. of Jets) x _____ (Jet Flow) gpm per jet = _____ (Total Jet Flow Rate) flow rate.

(For single pump pool/spa combo, use the higher of No. 3 or No. 4 in the following calculations for the pool & spa)

Determine Pipe Sizes:

Branch Piping to be [ ] inch to keep velocity @ 6 fps max. at _____ gpm Maximum System Flow Rate.

Trunk Piping to be [2"] inch to keep velocity @ 8 fps max. at 82 gpm Maximum System Flow Rate.

Return Piping to be [2"] inch to keep velocity @ 10 fps max. at 103 gpm Maximum System Flow Rate.

Determine Simplified TDH:

1. Distance from pool to pump in feet: 30
2. Friction loss (in suction pipe) in .10 inch pipe per 1 ft. @ 82 gpm = .10 (from pipe flow/friction loss chart)
3. Friction loss (in return pipe) in .16 inch pipe per 1 ft. @ 103 gpm = .16 (from pipe flow/friction loss chart)
4. 30 (Length of Suct. Pipe) x .10 (Ft of head/1 ft of Pipe) = 3 (TDH Suct. Pipe)
5. 30 (Length of Return Pipe) x .16 (Ft of head/1 ft of Pipe) = 4.8 (TDH Return Pipe)

TDH in Piping: 7.8

Filter loss in TDH (from filter data sheet): 7

Heater loss in TDH (from heater data sheet): –

Total all other loss: 20.94

Total Dynamic Head (TDH): 35.74

Selected Pump and Main Drain Cover:

Pump selection [VSSVRS PENTAIR 011017] (Pump model and size in Horsepower) using pump curve for TDH & System Flow Rate

Main Drain Cover [WATERWAY 640-132XV] (Make and Model) (System Flow Rate must not exceed approved cover flow rates)

Notes: Minimum system flow based on min. flow per skimmer of 35 gpm.

Determine the Number and Type of Required In-Floor Suction Outlets:

Check all that apply.

[ ] 2 [ ] suction outlets @ [ ] gpm max. flow (see note 2)

[ ] 3 [ ] suction outlets @ [ ] gpm max. flow (see note 3)

[ ] [ ] channel drain @ [ ] gpm x [ ] lin. ft. (see note 4)

TDH Calculation Options

For each pump

Check one.

- [ ] Simplified Total Dynamic Head (STDH) — Complete STDH Worksheet – Fill in all blanks.
- [ ] Total Dynamic Head (TDH) — Complete Program or other calcs. Fill in required blanks on worksheet & attach calculations.
- [ ] Maximum Flow Capacity of the new or replacement pump.

Notes

1. If a variable speed pump is used, use the max. pump flow in calculations.
2. For side wall drains, use appropriate side wall drain flow as published by manufacturer.
3. Insert manufacturer's name and aproved maximum flow
4. See installation instructions for number of ports to be used.
5. In-Floor suction outlet cover/grate must conform to most recent edition of ASME/ANSI A112.19.8 and be embossed with that edition approval.
6. Pump, Filter & Heater make and model cannot changed, and equipment location cannot be moved closer to pool without submitting a revised plan and TDH calculation worksheet for approval.

Flow and Friction Loss Per Foot
Schedule 40 PVC Pipe

Pipe Size	Velocity – Feet Per Second					
	6 fps		8 fps		10 fps	
1"	16 gpm	0.14'	21 gpm	0.23'	26 gpm	0.35'
1.5"	37 gpm	0.08'	50 gpm	0.14'	62 gpm	0.21'
2"	62 gpm	0.06'	82 gpm	0.10'	103 gpm	0.16'
2.5"	88 gpm	0.05'	117 gpm	0.09'	146 gpm	0.13'
3"	136 gpm	0.04'	181 gpm	0.07'	227 gpm	0.10'
4"	234 gpm	0.03'	313 gpm	0.05'	392 gpm	0.07'
6"	534 gpm	0.02'	712 gpm	0.03'		

Total Head In Feet Conversion Chart

PSI (Pressure Gauge) / Inches Mercury (Vacuum Gauge)

PSI	0	2	4	6	8	10	12	14	16	18
0	0.0	2.3	4.5	6.8	9.0	11.3	13.6	15.8	18.1	20.3
1	2.3	4.6	6.8	9.1	11.4	13.6	15.9	18.1	20.4	22.7
2	4.6	6.9	9.1	11.4	13.7	15.9	18.2	20.4	22.7	25.0
3	6.9	9.2	11.5	13.7	16.0	18.2	20.5	22.8	25.0	27.3
4	9.2	11.5	13.8	16.0	18.3	20.5	22.8	25.1	27.3	29.6
5	11.5	13.8	16.1	18.3	20.6	22.8	25.1	27.4	29.6	31.9
6	13.9	16.1	18.4	20.6	22.9	25.2	27.4	29.7	31.9	34.2
7	16.2	18.4	20.7	23.0	25.2	27.5	29.7	32.0	34.3	36.5
8	18.5	20.7	23.0	25.3	27.5	29.8	32.0	34.3	36.6	38.8
9	20.8	23.1	25.3	27.6	29.8	32.1	34.3	36.6	38.9	41.1
10	23.1	25.4	27.6	29.9	32.1	34.4	36.7	38.9	41.2	43.4
11	25.4	27.7	29.9	32.2	34.5	36.7	39.0	41.2	43.5	45.8
12	27.7	30.0	32.2	34.5	36.8	39.0	41.3	43.5	45.8	48.1
13	30.0	32.3	34.6	36.8	39.1	41.3	43.6	45.9	48.1	50.4
14	32.3	34.6	36.9	39.1	41.4	43.6	45.9	48.2	50.4	52.7
15	34.6	36.9	39.2	41.4	43.7	45.9	48.2	50.5	52.7	55.0
16	37.0	39.2	41.5	43.7	46.0	48.3	50.5	52.8	55.0	57.3
17	39.3	41.5	43.8	46.1	48.3	50.6	52.8	55.1	57.4	59.6
18	41.6	43.8	46.1	48.4	50.6	52.9	55.1	57.4	59.7	61.9
19	43.9	46.2	48.4	50.7	52.9	55.2	57.4	59.7	62.0	64.2
20	46.2	48.5	50.7	53.0	55.2	57.5	59.8	62.0	64.3	66.5
21	48.5	50.8	53.0	55.3	57.6	59.8	62.1	64.3	66.6	68.9
22	50.8	53.1	55.3	57.6	59.9	62.1	64.4	66.6	68.9	71.2
23	53.1	55.4	57.7	59.9	62.2	64.4	66.7	69.0	71.2	73.5
24	55.4	57.7	60.0	62.2	64.5	66.7	69.0	71.3	73.5	75.8
25	57.8	60.0	62.3	64.5	66.8	69.1	71.3	73.6	75.8	78.1
26	60.1	62.3	64.6	66.8	69.1	71.4	73.6	75.9	78.1	80.4
27	62.4	64.6	66.9	69.2	71.4	73.7	75.9	78.2	80.5	82.7
28	64.7	66.9	69.2	71.5	73.7	76.0	78.2	80.5	82.8	85.0
29	67.0	69.3	71.5	73.8	76.0	78.3	80.5	82.8	85.1	87.3
30	69.3	71.6	73.8	76.1	78.3	80.6	82.9	85.1	87.4	89.6
31	71.6	73.9	76.1	78.4	80.7	82.9	85.2	87.4	89.7	92.0
32	73.9	76.2	78.4	80.7	83.0	85.2	87.5	89.7	92.0	94.3
33	76.2	78.5	80.7	83.0	85.3	87.5	89.8	92.0	94.3	96.6
34	78.5	80.8	83.1	85.3	87.6	89.8	92.1	94.4	96.6	98.9
35	80.9	83.1	85.4	87.6	89.9	92.2	94.4	96.7	98.9	101.2

NOTE: FIELD TDH MUST BE EQUAL TO OR HIGHER THAN THE CALCULATED TDH.

5-3-13
Date

Michael Canto
CPC 1457306
352-332-7665

Date

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Swimming Pool Specification For:

MARCIA SUE MONG
462 SW FAIRLINGTON CT.
LAKE CITY FL. 32025