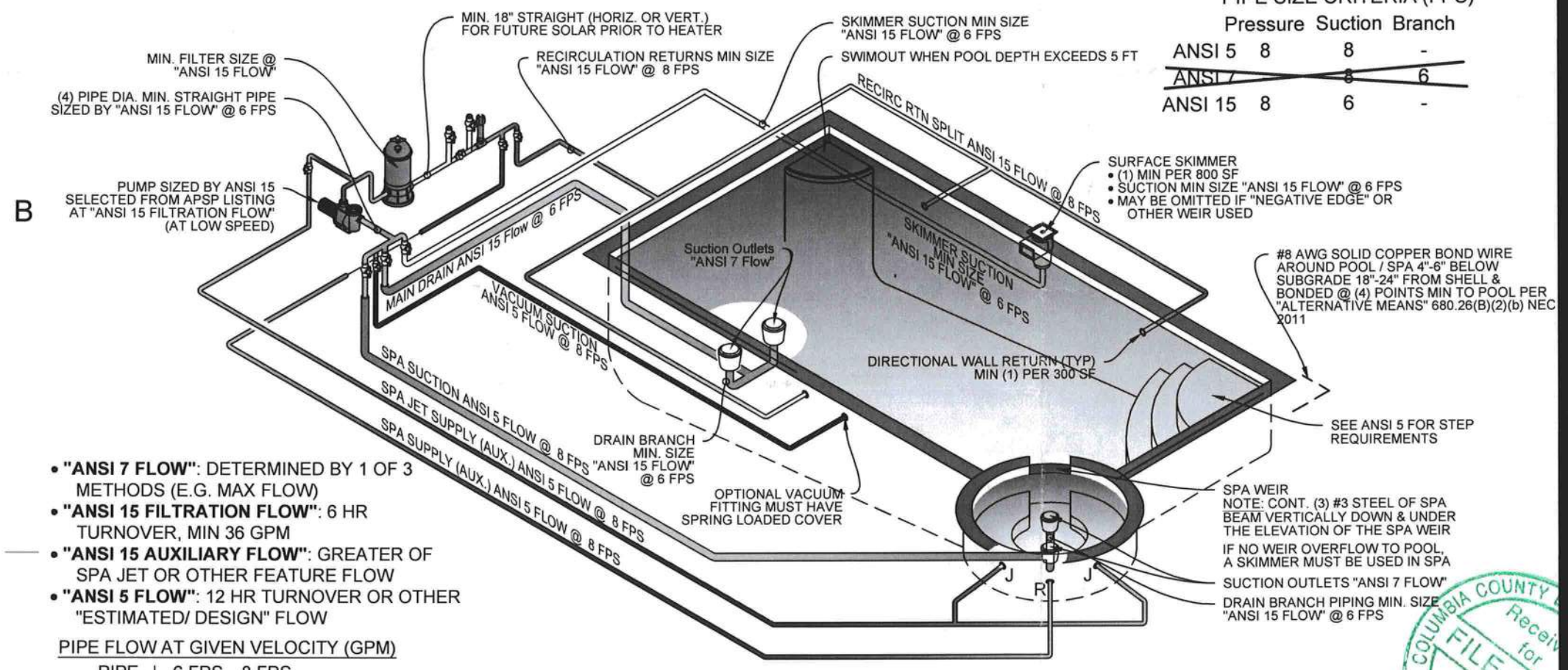
1 2

NOTE TO REVIEWER: DETAILED TDH CALCULATIONS ARE REQUIRED TO DETERMINE ANSI 7 COMPLIANCE

COMPLIES WITH 2017 FBC 6TH ED, ALL VOLUMES



PIPE SIZE CRITERIA (FPS)

	Pressure	Suction	Branch
ANSI 5	8	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 AUXILIARY FLOW"**: GREATER OF SPA JET OR OTHER FEATURE FLOW
- **"ANSI 5 FLOW"**: 12 HR TURNOVER OR OTHER "ESTIMATED/ DESIGN" FLOW

PIPE FLOW AT GIVEN VELOCITY (GPM)

PIPE	6 FPS	8 FPS
1"	16	22
1-1/2"	38	51
2"	63	84
2-1/2"	90	119
3"	138	184
4"	238	317
6"	540	720

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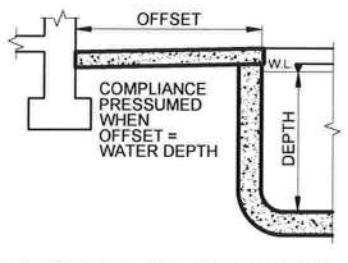
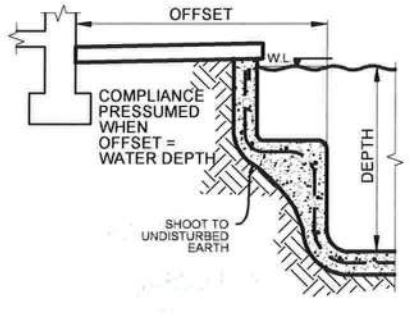


"ANGLE OF REPOSE" OR SEE CONTRACTOR PLAN



PROXIMITY TO STRUCTURE

FBC NO LONGER REQUIRES EXCAVATIONS OUT OF THE "ANGLE OF REPOSE PLUS 1 FT". THE CURRENT REQUIREMENT IN 2017 FBC 6TH ED, SECTION 1804.1 STATES THAT "EXCAVATIONS SHALL NOT REMOVE LATERAL SUPPORT FROM ANY FOUNDATION." THEREFORE THE FOLLOWING IS REQUIRED:

1. WHEN THE POOL DECK DISTANCE IS EQUAL TO OR GREATER THAN WATER DEPTH, NO MITIGATION OF THE SHELL STRUCTURE IS REQUIRED.
2. WHEN THE POOL DECK DISTANCE IS EQUAL TO OR GRATER THAN THE WATER DEPTH, THERE IS NO SHORING OR FOUNDATION SUPPORT INITIALLY REQUIRED,
3. WHEN THE POOL DECK DISTANCE IS LESS THAN THE WATER DEPTH, THE ENGINEER SHALL PROVIDE A MITIGATION SPECIFICATION, EITHER TO PROTECT THE FOUNDATION DURING EXCAVATION OR STRENGTHEN THE SHELL FROM STRUCTURE LOADS.
4. IF DURING EXCAVATION, SOIL CONDITIONS APPEAR TO LEAD TO LOSS OF FOUNDATION SUPPORT, THE CONTRACTOR SHALL CEASE EXCAVATION AND CONTACT THE ENGINEER FOR MITIGATION SPECIFICATIONS.
5. IF AFTER EXCAVATION THE CONTRACTOR OR INSPECTOR FIND A LOSS OR THREATENED LOSS OF SOIL SUPPORT AT THE FOUNDATION, CONTACT THE ENGINEER FOR A MITIGATION SPECIFICATION.

TYPICAL RESIDENTIAL POOL / SPA SCHEMATIC PLAN & NOTES

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 R4501.12.1
- 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 6TH Ed, 2017.
- Electrical equipment, wiring, & installation shall conform to the National Electrical Code 2014 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 6th Edition - 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 6TH ED 2017 FBC, ALL VOLUMES, INCLUDING 2017 FBC ENERGY CONSERVATION CODE

Fun State Pools Inc.
for use in various jurisdictions

KIMES ENGINEERING AND MANAGEMENT SERVICES, INC
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kent@kimesengineering.com
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02-27-19	LIMITS ON STRUCTURE ADDED
DATE:	REVISIONS:

DWG. BY:	MCM	PRINTED:	27-Feb-19
CHKD. BY:	JKK	SCALE:	AS NOTED
DATE:	27-Feb-20		

2017 6TH ED FBC

TYPICAL PLAN SECTIONS FOR RESIDENTIAL POOL/SPA

S1

SHEET OF

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

THIS DOCUMENT VALID ONLY 12 MONTHS FROM DATE SIGNED

\\KIMESRV\Company Shared Docs\2017 FBC 6TH ED\2017 FBC KE Std Eng - 20190227.dwg

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: 520 (Surf. Area) x 4.75 (Avg. Depth) x 7.48 (gal./cubic foot) = 18476 (Vol. in gal.)
2. Determine preferred Turnover Time in hours: 8 (Hours) x 60 (min. / hr.) = 480 (Turnover in Min.)
3. Determine Max Flow Rate: 18476 (Vol. in gal.) / 480 (Turnover Mins.) = 38 (Pool Flow Rate) + - (Feature Flow Rate) = 38 (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: 10'
2. Friction loss (in suction pipe) in 2" inch pipe per 1 ft. @ 82 gpm = .10 (from pipe flow/friction loss chart)
3. Friction loss (in return pipe) in 2" inch pipe per 1 ft. @ 103 gpm = .16 (from pipe flow/friction loss chart)
4. 10' (Length of Suct. Pipe) x 1.0 (Ft of head/1 ft of Pipe) = 1.0 (TDH Suct. Pipe)
5. 10' (Length of Return Pipe) x 1.6 (Ft of head/1 ft of Pipe) = 1.6 (TDH Return Pipe)

TDH in Piping: 2.6

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

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

Total all other loss: 20.08

Total Dynamic Head (TDH): 29.68

Selected Pump and Main Drain Cover:

Pump selection [VS+SVRS Pentair 011017] (Pump model and size in Horsepower) using pump curve for TDH & System Flow Rate

Main Drain Cover [CMP25506-320-000] (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.

☐ ◎ 3'-0" ◎ 2 [ ] suction outlets @ [ ] gpm max. flow (see note 2).

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

☒ [1-32"] [CMP 25506-320-000] channel drain @ [175] gpm w/ [2/2] ports (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)									
	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.

8/1/20
Date

x Michael Canto
Contractors Signature

Michael S. Canto
Contractors Printed Name

CPC 1457306
Contractors Cert. No.

Date

COLUMBIA COUNTY BUILDING DEPARTMENT PLANS EXAMINER Received for FILE COPY Code Compliance

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mike@funstatepoolsinc.com

Fun State Pools Inc.
352•POOL

Michael Canto

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3601 N.W. 97th Blvd. • Gainesville, Florida 32606

Swimming Pool Specification For:

Mark Colton
171 Ansley Pl