

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 sq ft of surf. area)

1. Calculate Pool Volume: $\frac{420}{\text{Surf. Area}} \times \frac{4.5}{\text{Avg. Depth}} \times 7.48 \text{ (gal./cubic foot)} = \frac{14,137}{\text{Vol. in gal.}}$
 2. Determine preferred Turnover Time in hours: $\frac{8}{\text{Hours}} \times 60 \text{ (min. / hr.)} = \frac{480}{\text{Turnover in Min.}}$
 3. Determine Max Flow Rate: $\frac{14,137}{\text{Vol. in gal.}} \div \frac{480}{\text{Turnover in Min.}} = \frac{29,450}{\text{Flow Rate (gpm)}} + .58 = \frac{30,030}{\text{System Flow Rate}}$
 4. Spo Jets: $\frac{7}{\text{No. of Jets}} \times \frac{1,040}{\text{Jet Flow Rate}} \text{ gpm per jet} = \frac{7,280}{\text{Total Jet Flow Rate}}$ flow rate.
- (For single pump pool/spo combo, use the higher of No. 3 or No. 4 in the following calculations for the pool & spo)

Determine Pipe Sizes:

Branch Piping to be 2" inch to keep velocity @ 6 fps max. at 82 gpm Maximum System Flow Rate.

Trunk Piping to be 2" inch to keep velocity @ 8 fps max. at 103 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: 15
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. $\frac{15}{\text{ft of head/1 ft of Pipe}} \times \frac{.10}{\text{TDH Suction Pipe}} = \frac{1.5}{\text{TDH Return Pipe}} = \frac{2.4}{\text{TDH in Piping: } 3.9}$

Selected Pump and Main Drain Cover:

Pump selection: V5SVRS PEUTAIR D11017 using pump curve for TDH & System Flow Rate

Main Drain Cover

642-132X WATERWAY (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" ☒ suction outlets @ 2 gpm max. flow (see note 2).
- ☒ suction outlets @ 3 gpm max. flow (see note 3).
- 32" channel drain @ 170 gpm w/ 2 1/2" 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 codes. 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 approved 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 be 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	6 fpm	8 fpm	10 fpm
1"	16 gpm	21 gpm	26 gpm
1.5"	37 gpm	50 gpm	62 gpm
2"	62 gpm	82 gpm	103 gpm
2.5"	88 gpm	117 gpm	146 gpm
3"	136 gpm	181 gpm	227 gpm
4"	234 gpm	313 gpm	392 gpm
6"	534 gpm	712 gpm	892 gpm

Total Head In Feet Conversion Chart

Inches Mercury (Vacuum Gauge)

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	13.7	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	20.6	22.8	25.1	27.3	29.6
5	11.5	13.8	16.1	18.3	20.6	22.9	25.2	27.4	29.7	31.9
6	13.8	16.1	18.4	20.6	22.9	25.2	27.5	29.8	32.0	34.2
7	16.2	18.4	20.7	23.0	25.2	27.5	29.8	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	36.7	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	36.8	39.0	41.3	43.5	45.8
12	27.7	30.0	32.2	34.5	36.8	39.1	41.3	43.6	45.9	48.1
13	30.0	32.3	34.6	36.8	39.1	41.4	43.6	45.9	48.2	50.4
14	32.3	34.6	36.9	39.1	41.4	43.7	45.9	48.2	50.5	52.7
15	34.6	36.9	39.2	41.5	43.7	46.0	48.3	50.5	52.8	55.0
16	37.0	39.2	41.5	43.7	46.0	48.3	50.6	52.8	55.1	57.3
17	39.3	41.5	43.8	46.1	48.3	50.6	52.9	55.2	57.4	59.6
18	41.6	43.8	46.1	48.4	50.7	52.9	55.2	57.4	59.7	61.9
19	43.9	46.2	48.4	50.7	53.0	55.2	57.5	59.8	62.1	64.2
20	46.2	48.5	50.7	53.0	55.2	57.5	59.8	62.1	64.3	66.5
21	48.5	50.8	53.0	55.3	57.6	59.9	62.1	64.4	66.6	68.8
22	50.8	53.1	55.3	57.6	59.9	62.2	64.4	66.7	68.9	71.2
23	53.1	55.4	57.7	59.9	62.2	64.5	66.7	69.0	71.3	73.5
24	55.4	57.7	60.0	62.2	64.5	66.8	69.1	71.3	73.6	75.8
25	57.8	60.0	62.3	64.6	66.8	69.1	71.4	73.6	75.9	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	71.5	73.7	75.9	78.2	80.5	82.7
28	64.7	66.9	69.2	71.5	73.8	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	92.1	94.4	96.6
34	78.5	80.8	83.1	85.3	87.6	89.8	92.1	94.4	96.7	98.9
35	80.9	83.1	85.4	87.6	89.9	92.2	94.4	96.7	99.0	101.2

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

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6-19-12

Date

Date

Michael Canto

MICHAEL CANTO

2063 TUSTENUGEE AVE

LAKE CITY FL 32025



Michael Canto

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

Swimming Pool Specification For:

Abernethy Residence

2063 TUSTENUGEE AVE

LAKE CITY FL 32025

Voice (352) 332-7665
Fax (352) 332-0266
mike@funstatepooling.com

Fun State Pools

332 POOL

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

REF. NO.

POOL SHAPE: CRESTIAN JOB NO.

SIZE: 14' x 16' x 3' DEPTH: 3' TO 6' PERM: 85' AREA: 420

DECK: YES DECK SURFACE: PAVER DECK O-DRAIN: YES

COPING: YES CANTILEVER: NO

TILE: 6" x 6" COLOR: YES - DUNE

STEP COLOR: NO COLOR: NO

TURNOVER: 8' x 16' x 3' FILTER TYPE: PLM SIZE: 150 PUMP: 1/2 HP

SKIMMER: YES INLETS: 5 MAIN DRAIN: YES

GRAB RAILS: NO HAND RAIL: NO LADDER: NO

POOL LIGHT: YES VOLTS: 120 WATTS: 400

DIVING BOARD: NO SIZE: NO

AUTOMATIC CHLORINATOR: NO TIMER: YES FILL LINE: NO

CLEANING EQUIPMENT: NO SWIMOUT: YES SIZE: 1/2" x 1/2" JETS: 1

ROPE & FLOATS: NO ROPE ANCHORS: NO

AUTOMATIC CLEANING SYSTEM: NO POOL HEATER: 333,000

GAS LINE BY: DUNE SLIDE: NO SIZE: NO BTU GAS

SPA SPECIFICATIONS

SIZE: 7' x 10' DEPTH: 3' JETS: 7

BLOWER: NO SKIMMER: NO LIGHT: YES

SPILLWAY: YES HEATER: YES MAIN DRAIN: YES

SCREEN ENCLOSURE: NO SCREEN ROOF: NO DOORS: NO

ALUM-ROOF: NO GUTTER: NO

REMOVE FENCE: NO REPLACE FENCE: NO TEMP. FENCE: NO

TREE REMOVAL: NO STUMP REMOVAL: NO

SHRUBS: NO SAVE: NO HAUL AWAY: NO

SEPTIC TANK: NO SEWER LINE: NO

POWER LINE: NO RELOCATE: NO

GAS LINE: NO WATER LINE: NO

SPRINKLERS: NO REROUTE: NO CAP: NO

PHONE LINE: NO ACCESS PERMISSION: NO

RETAINING WALL: NO

NAME: Jack + CLARESE MORTON

ADDRESS: 2663 JUSTENUGEE AVE

CITY: LAKE CITY PHONE: CLARESE CELL 386-303-1108

Part 2 of contract dated: _____

LOT: ACRES BLOCK: _____ SUB: _____ for pool at:

BOOK: _____ PAGE: _____

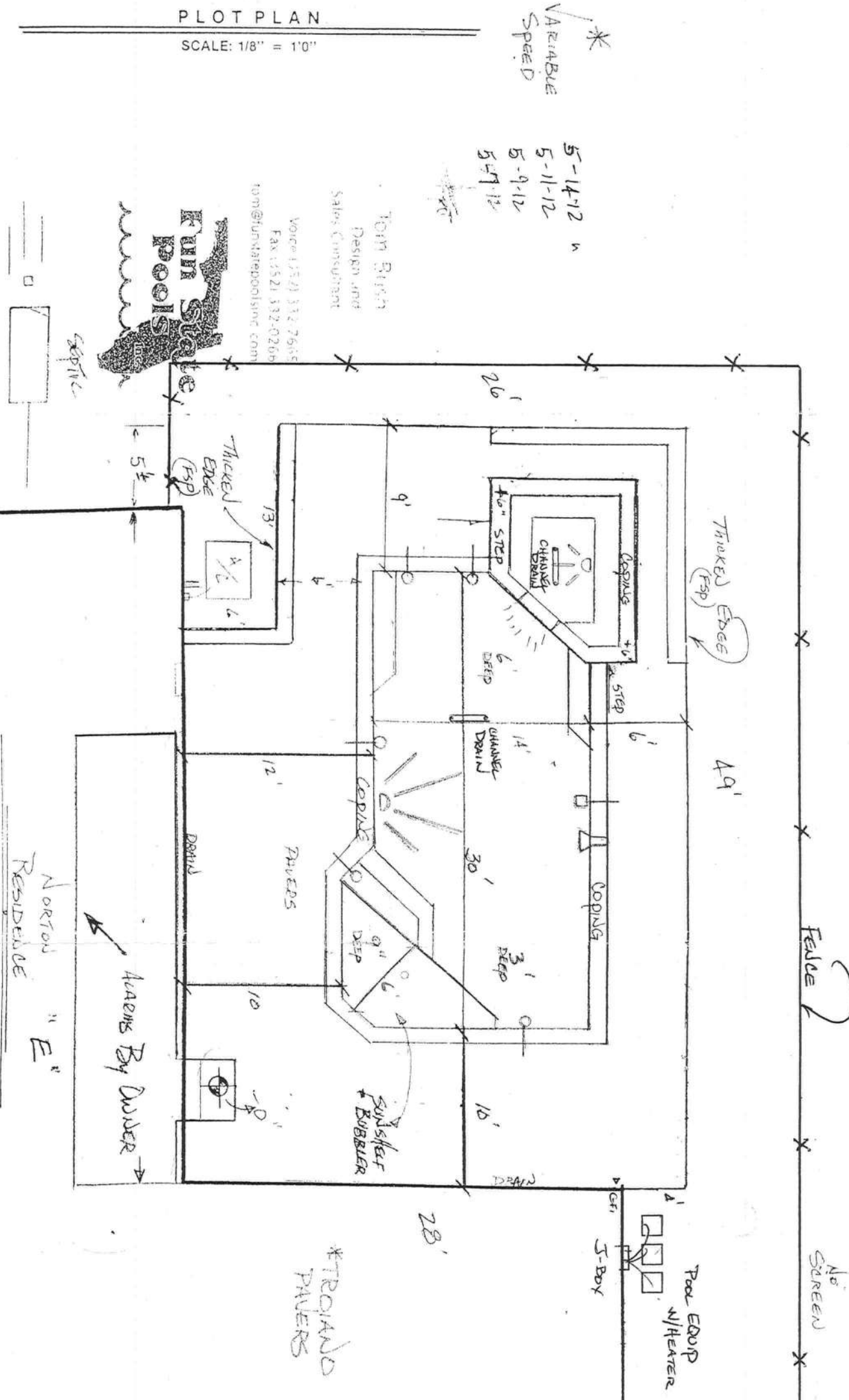
ALSO DESCRIBED AS: 37-45-17-08929-000

CUSTOMER'S SIGNATURE: [Signature]

DATE: 6-12-12 CHW BY: _____

PLOT PLAN

SCALE: 1/8" = 1'0"



EXHAUSTED SOIL TO REMAIN ON SITE

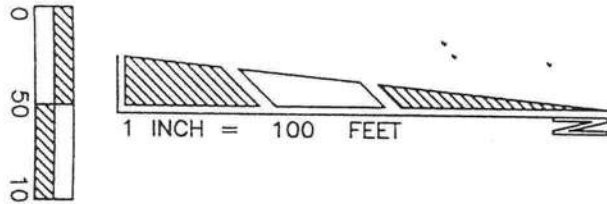
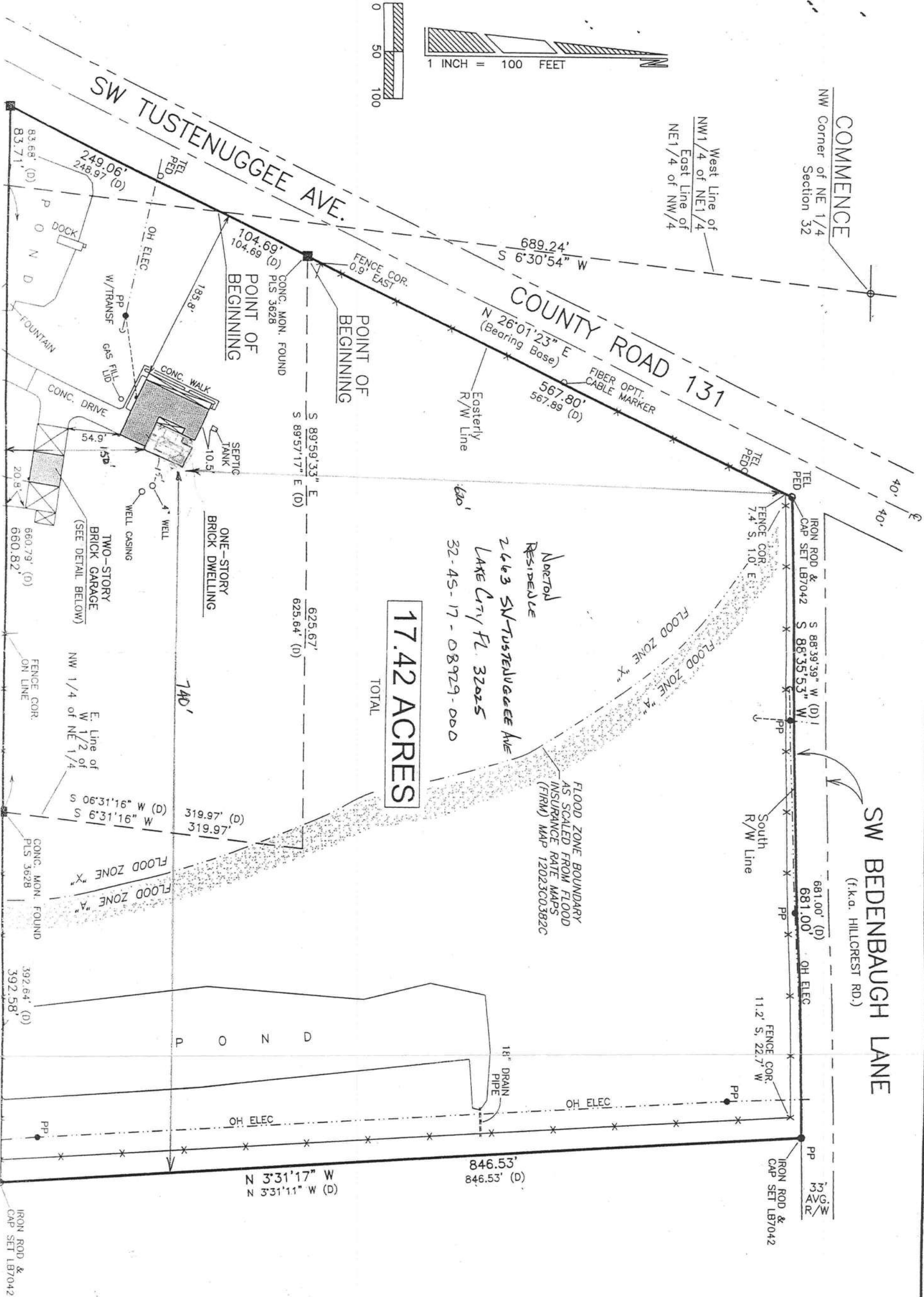
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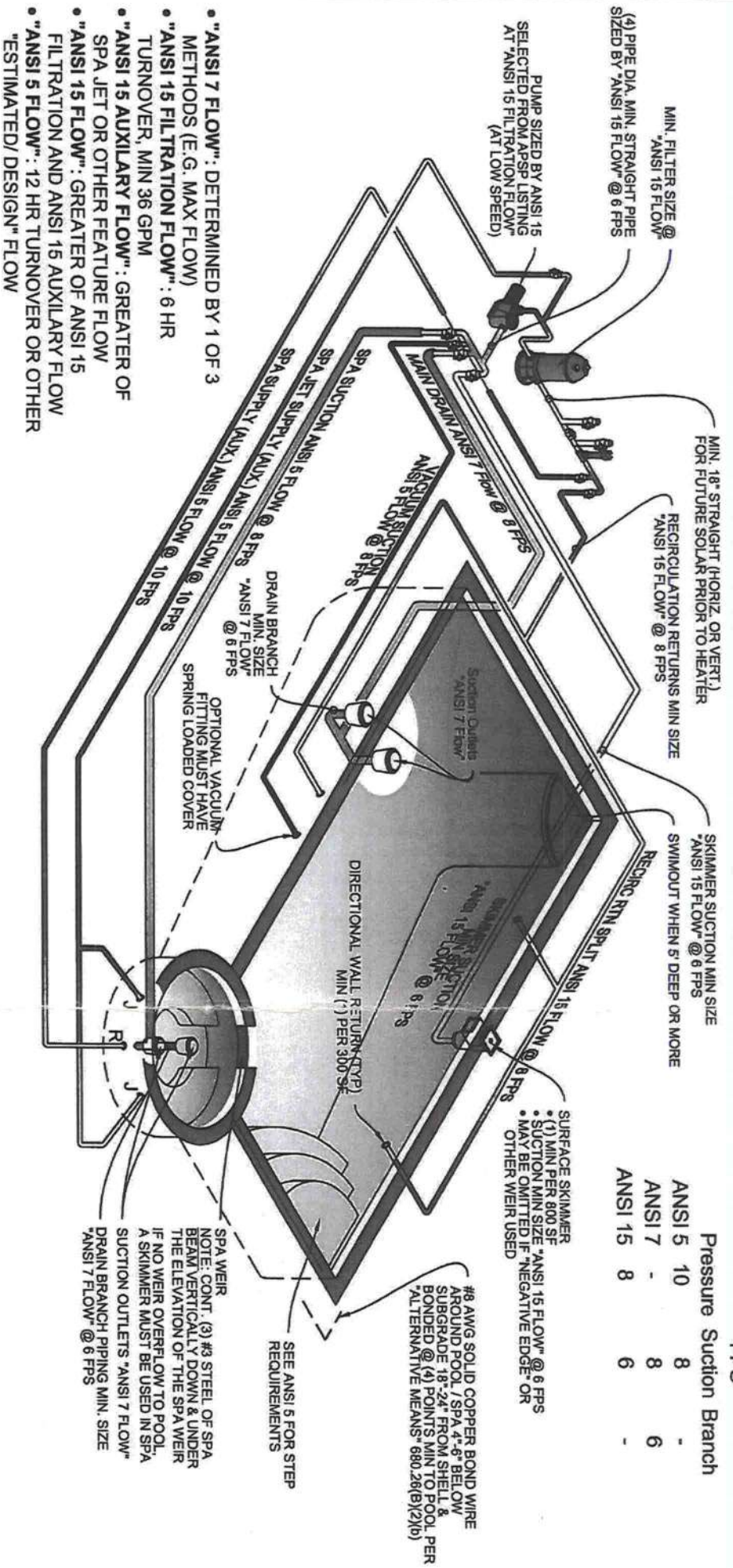
Access

Note: Angle of repose of existing foundation shall not be disturbed by pool excavation. Engineering required.

Equipment Bonding Grid as per NEC 680-26 (Code) Note - Pool shall be wired as per NEC and all metal within 5' of pool shall be bonded.

Note: All plan dimensions are subject to field verification and modification.



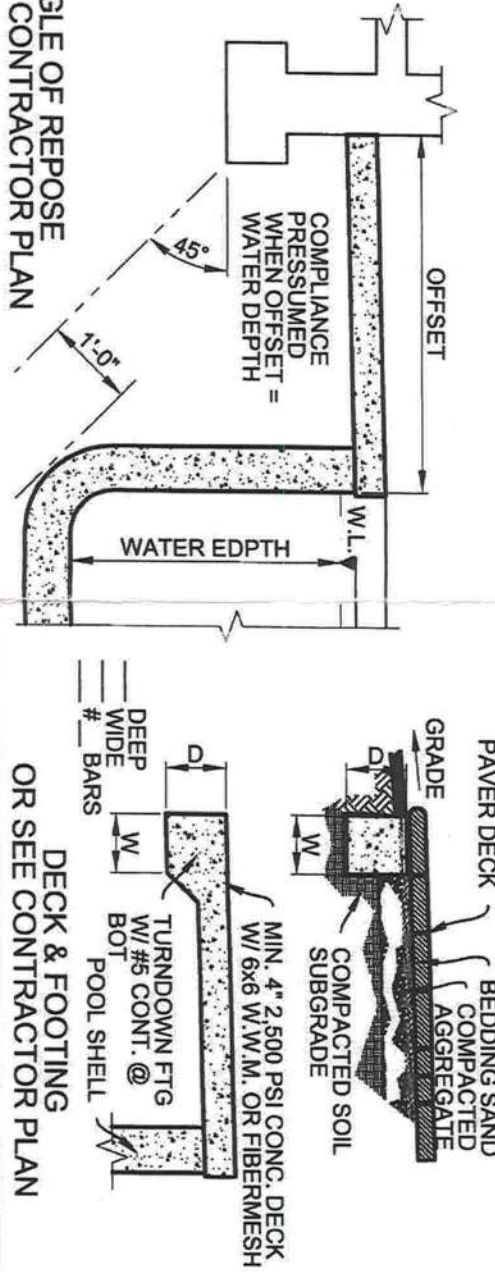


Pressure Suction Branch

	ANSI 5	ANSI 10	ANSI 7	ANSI 15
FPS	8	8	8	6

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



EXAMPLE RESIDENTIAL POOL / SPA SCHEMATIC PLAN & NOTES

SCALE: N.T.S.

1

2

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 R410.1.12.1
 - 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 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 COMPLES WITH 2010 FBC INCLUDING 2010 FBC ENERGY CONSERVATION CODE

FUN-STATE POOLS, INC.
FOR USE IN ALACHUA COUNTY



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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)

