KIMES ENGINEERING AND MANAGEMENT SERVICES, INC.

Owner Lacy / Sheri Crews Permit #

Property Address 3452 SW CR 242 Area Lake City Lot

SITE SPECIFIC INFORMATION FOR COMPLIANCE WITH 2010 FBC & ANSI 7

	FILTRATION PUMP	SPA PUMP	FEATURE PUMP
Pump Selection- Brand & Model			
CHOOSE OPTION FOR DETERMINING MAXIMUM SYSTEM FLOW AT SUCTION OUTLETS			
Maximum Flow from Pump- (Attach product pump curve)	☐	☐	☐
Simplified TDH- (Attach pump curve & Calculation)	☒	☐	☐
Detailed TDH Calculation- (Attach pump curve & Calculation)	☐	☐	☐
Pump Flow from Pump Curve with method indicated	simplified TDH GPM	GPM	GPM
Adjusted **Maximum** Pump Flow for sizing Branch Pipe & Suction based on number of Suction Outlets used	N/A GPM	GPM	GPM
Minimum Branch Pipe Size given flow at 6 FPS	N/A Inch Pipe	Inch Pipe	Inch Pipe
LISTED SUCTION COVER/GRATE			
Number of Suction Outlets	one unblockable		
Manufacturer & Model(attach product sheet)	Waterway 640 132		
Maximum Flow Floor(GPM)/ **Maximum** Flow Wall (GPM)	/	/	
TRUNK/SUCTION PIPE SIZING			
Minimum Trunk Pipe Size given flow above @ 8 FPS	Inch Pipe	Inch Pipe	Inch Pipe

OTHER PIPE SIZE SUMMARY	FULL FLOW	SPLIT FLOW BRANCH
SKIMMER SUCTION- ANSI 15 FLOW @ 6 FPS	73.19 - 2"	
FILTRATION RETURN SIDE-ANSI 15 FLOW @ 8 FPS	73.19 - 2"	
AUXILIARY RETURN SIDE- ANSI 5 FLOW @ 10 FPS		
2ND AUXILIARY RETURN SIDE- ANSI 5 FLOW @ 10 FPS		
OPTIONAL VACUUM OR SWEEP LINE- ANSI 5 FLOW @ 8 FPS		

NOTES

KIMES ENGINEERING AND MANAGEMENT SERVICES, INC.

CLIENT OF KIMES ENGINEERING Fun State Pools

WORKSHEET SHOWING DATA FOR COMPLIANCE WITH 2010 FBC, ANSI/APSP- 15

OWNER Lacy | Sheri Crews ADDRESS: 3452 SW CR 242 Lake City Florida LOT:

ANSI 15 Filtration Flow

VOLUME OF POOL Area 477 x Avg Depth 5.25 = Vol in CF 2504

Vol in CF x 7 48 gal/CF = 18,732 gallons

Calculate Maximum Filtration Flow Rate. Pool Volume/ 360 = 52.03 GPM [if <13,000 use 36 gpm]

ANSI 15 Auxiliary Flow

Calculate Maximum Auxiliary Load Design Flow Rate

Number Spa Jets X 7 to 15 GPM = ✓ GPM

Or Water Feature Flow ✓ GPM

ANSI 15 Flow

ANSI 15 Flow _____ GPM [greater of *ANSI 15 Auxiliary Flows* and *ANSI 15 Filtration Flow*]

PUMP FROM APSP LISTING

Select a pump with Curve A (pools <17,000 gal) or Curve C (pools >17,000 gal) flow equal to or less than *ANSI 15 Filtration Flow*. May select a multi speed pump with flows acceptable for the *ANSI 15 Auxiliary Flow*, with acceptable Curve A or C listed flows Curve A or C flows listed have no relationship or requirement related to *ANSI 15 Auxiliary Flow*

Pump Make & Model: IntelliPro VS + SVRS

Pump Flow Rate(s) from Listing: @ Low/Single speed 11 GPM, & @ High Speed 73 GPM

Pump Control: Filtration Pump has no auxiliary load _____, time clock to be installed VSTSVRS Pentair

Filtration Pump with auxiliary load Control for low speed default w/in 24 hrs self contained programmin
Make/model

Size filter on "*ANSI 15 Flow*"

Filter Rates Cartridge= 0 375 gpm/sf, Sand= 15 gpm/sf, DE= 2 gpm/sf

Filter size *ANSI 15 Flow* 52.03 GPM / Rate .375 gpm/sf = 139 SF Min Filter Size

[see pool plan for filter model or show here Sta Rite PLM]

Backwash Valve. 2" or Return Pipe Size _____ or N/A _____

ANSI 7 Flow see Site Specific Information Sheet

ANSI 5 Flow: Depending on the pipe, use any of the ANSI 15 Filtration, or ANSI 15 flows or the flow at 60 ft TDH on the selected pump curve for the *ANSI 5 Flow*

See flow vs velocity vs pipe size on Standard Engineering

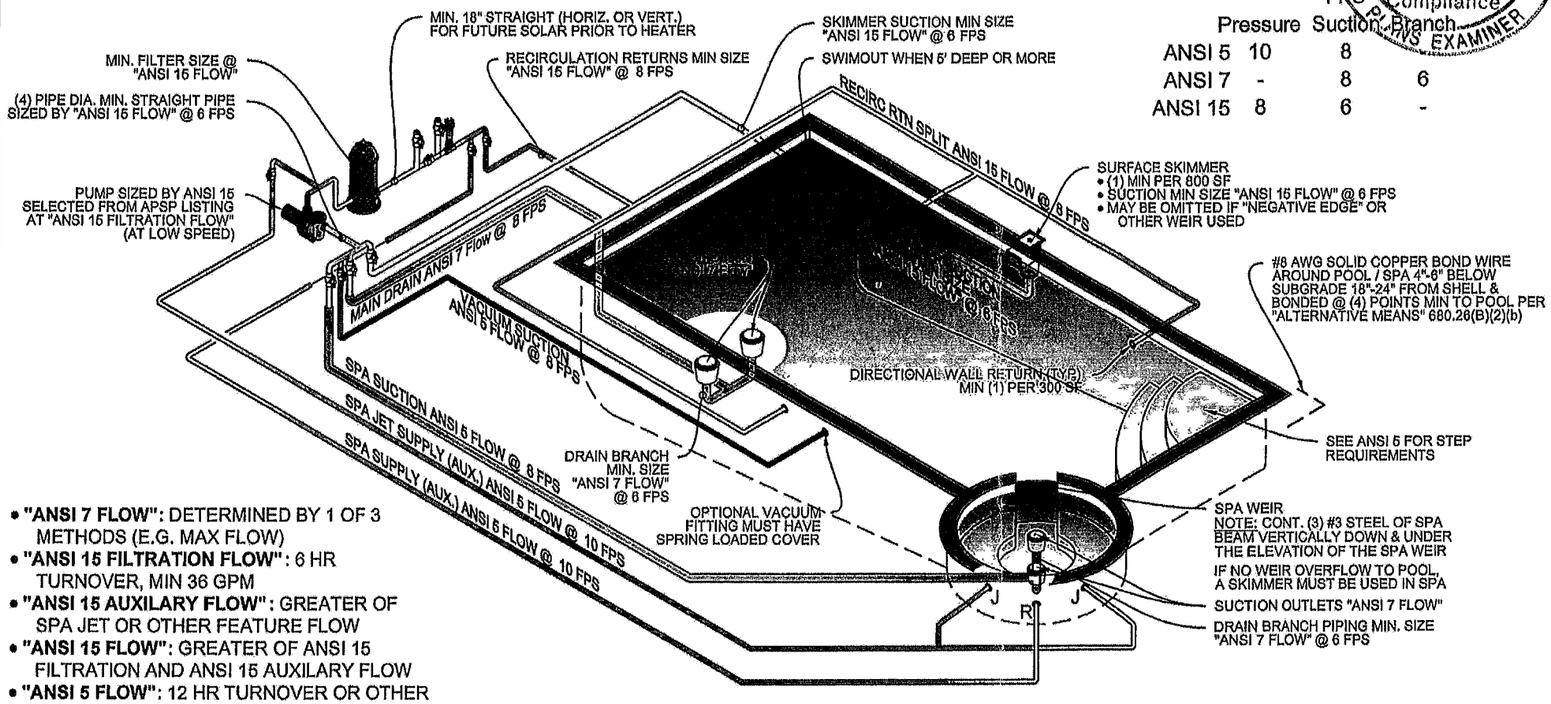
See summary of pipe sizes on ANSI 7 Site Specific Information Sheet

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

HEATER MODEL: N/A

GAS HEATER EFFICIENCY RATING N/A with no pilot light [min 78%]

HEAT PUMP EFFICIENCY COP N/A [min 4.0]

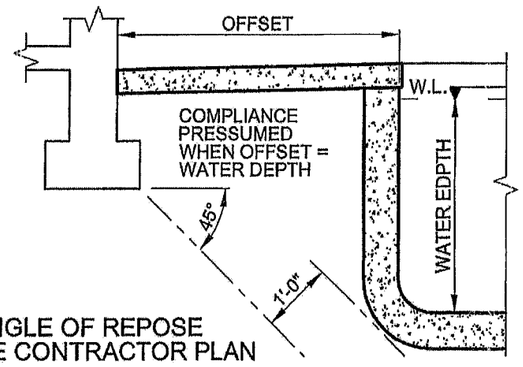


	Pressure	Suction	Branch
		FPS	
ANSI 5	10	8	
ANSI 7	-	8	6
ANSI 15	8	6	-

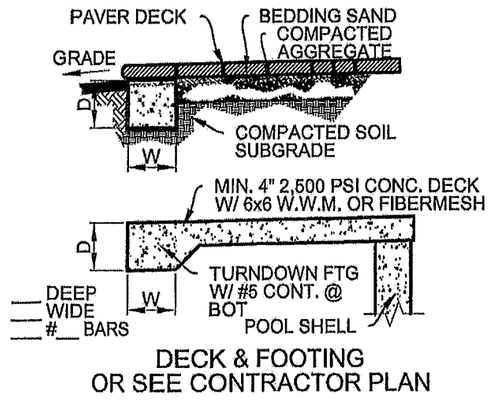
- **"ANSI 7 FLOW"**: DETERMINED BY 1 OF 3 METHODS (E.G. MAX FLOW)
- **"ANSI 15 FILTRATION FLOW"**: 6 HR TURNOVER, MIN 36 GPM
- **"ANSI 15 AUXILARY FLOW"**: GREATER OF SPA JET OR OTHER FEATURE FLOW
- **"ANSI 15 FLOW"**: GREATER OF ANSI 15 FILTRATION AND ANSI 15 AUXILARY FLOW
- **"ANSI 5 FLOW"**: 12 HR 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
P.E. 33678, C.A. 27189

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

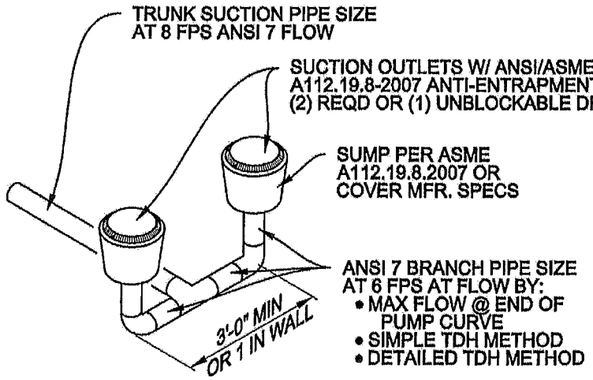
TYPICAL PLAN & SECTIONS FOR RESIDENTIAL POOL/SPA

S1

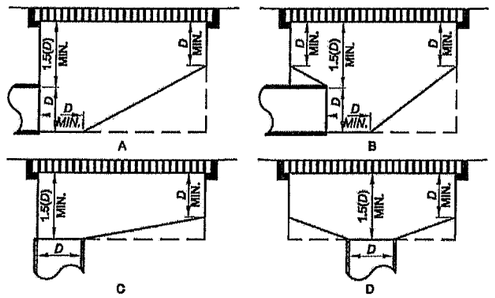
SHEET OF

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



MAIN DRAINS MAY BE OMITTED ENTIRELY

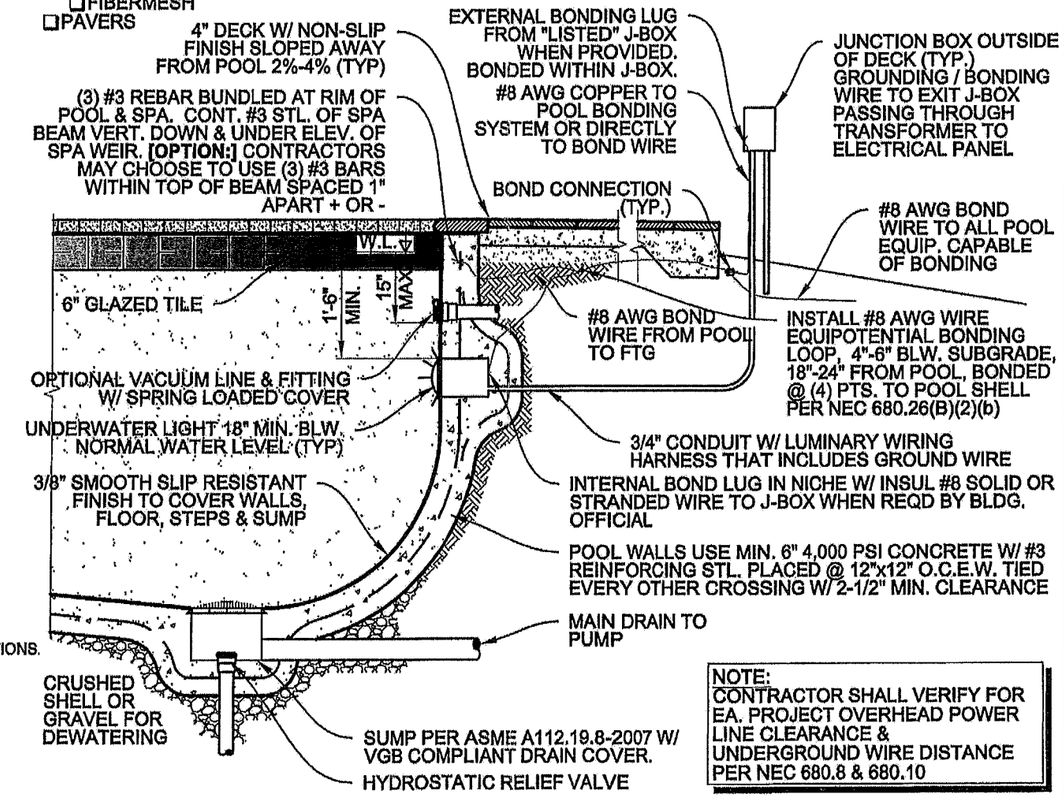


GENERAL NOTES:
a. D = INSIDE DIA. OF PIPE
b. ALL DIMENSIONS SHOWN ARE MINIMUMS.
c. ALL HIDDEN LINES INDICATE SUGGESTED SUMP CONFIGURATIONS.

NOTES:
- FIELD BUILD SUMPS MEETING THESE CRITERIA REQD WHEN MFR POTS NOT USED
- MAY OMIT IF LISTED COVER DOCUMENATION STATES OTHER CLEARANCE TO SUCTION PIPE REQD

SUMP SECTIONS PER ASME A112.19.8-2007

SCALE: N.T.S.



NOTE:
CONTRACTOR SHALL VERIFY FOR EA. PROJECT OVERHEAD POWER LINE CLEARANCE & UNDERGROUND WIRE DISTANCE PER NEC 680.8 & 680.10

POOL DEEP END SECTION

SCALE: N.T.S.

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's Fast. It's Free. It's the Law.
www.callsunshine.com

NOTE

1. APPROVED PRODUCT SPECIFICATION MAY DIFFER FROM FIELD BUILT SUMPS SHOWN ON THIS PAGE

ADDITIONAL STRUCTURAL NOTES

- Use minimum ASTE A815 Grade 40 Steel
- Lap #3 bars minimum 15"
- Lap #5 bars minimum 25"
- 6" Shell thickness and 2-1/2" concrete coverage are minimums
- Use 4,000 psi concrete
- Contractor / Owner required to:
  - Contact Engineer if pool not placed on undisturbed and de-watered earth that can meet 2,000 psf bearing capacity.
  - When buried debris is encountered or questionable conditions are indicated at the work site prior / during construction, a subsurface consultant shall conduct boring(s) in the area of the pool to confirm soil bearing capacity, clear of buried debris, & verifying ground water level
  - All modified soils & earth fill under perspective pool area shall meet a soil density and compaction minimum of 95% modified proctor without settlement.

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

FUN STATE POOLS. INC.

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JAMES KENT KIMES LICENSE NO. 33678 STATE OF FLORIDA PROFESSIONAL ENGINEER

TYPICAL PLAN & SECTIONS FOR RESIDENTIAL POOL/SPA

S2

SHEET OF

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

Fun State Pools Florida

332-POOL

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

REF. NO._____

POOL SHAPE "Rectangle JOB NO._____
SIZE 15 X 30 DEPTH 3'6" TO 7' PERM 92 AREA 477
DECK 996 / DECK SURFACE Pavers DECK-O-DRAIN yes
COPING Paver CANTILEVER NO
TILE 6" x 6" COLOR owner
STEP COLOR NO COLOR NO
TURNOVER 8hr FILTER TYPE PLM SIZE 100 PUMP VS+ SVRS
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 ~~SALT~~ TIMER NO FILL LINE NO
CLEANING EQUIPMENT Manual SWIMOUT yes SIZE per plan JETS NO
ROPE & FLOATS NO ROPE ANCHORS NO
AUTOMATIC CLEANING SYSTEM Legend POOL HEATER NO
GAS LINE BY NO SLIDE NO SIZE NO

SPA SPECIFICATIONS NO SPA

SIZE _____ DEPTH _____ JETS _____
BLOWER _____ SKIMMER _____ LIGHT _____
SPILLWAY _____ HEATER _____ MAIN DRAIN _____
SCREEN ENCLOSURE owner ROOF owner DOORS owner
ALUM ROOF owner GUTTER owner
REMOVE FENCE owner REPLACE FENCE _____ TEMP FENCE owner
TREE REMOVAL owner STUMP REMOVAL owner
SHRUBS owner SAVE owner HAUL AWAY owner
SEPTIC TANK owner SEWER LINE owner
POWER LINE owner RELOCATE owner
GAS LINE owner WATER LINE owner
SPRINKLERS owner REROUTE owner CAP owner
PHONE LINE owner ACCESS PERMISSION owner
RETAINING WALL owner

Custom Design FUN STATE POOLS

NAME Lacy / Sherrie Cruse
ADDRESS 3452 SW CR 242
CITY Lake City PHONE 386-719-4872

Part 2 of contract dated _____ for pool at
LOT ___ BLOCK __ SUB _____
BOOK PAGE
ALSO DESCRIBED AS
CUSTOMER'S SIGNATURE
DWN BY Barry DATE 2/6/14 RK BY

PLOT PLAN
SCALE 1/8" = 1'0"

DIRECTION

(1) 15'x 30' pool # 40,000
(2) no gas/ no heat
(3) barrier fence

COLUMBIA COUNTY BUILDING DEPARTMENT
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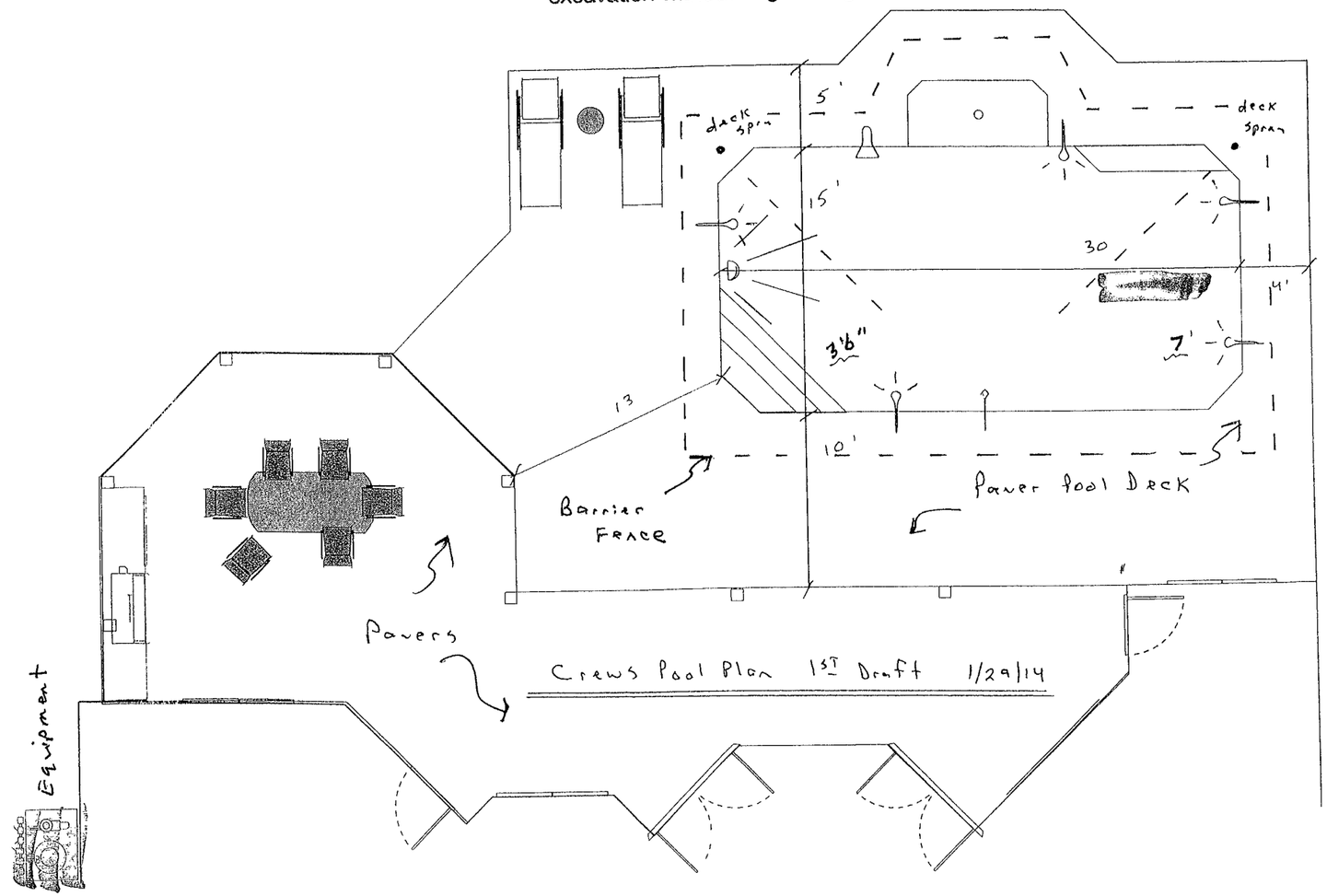
PLANS EXAMINER

Equipotential 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 - Angle of repose of existing foundation shall not be disturbed by pool excavation without engineering.

NO CONCRETE DECK
12X12 MONO FOOTING ONLY



2/6/14

Note All plan dimensions are subject to field verification

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 477 (Surf Area) x 5.25 (Avg Depth) x 7 48 (gal /cubic foot) = 18,732 (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 18,732 (Vol in gal) / 480 (Turnover Mins) = 39.02 (Pool Flow Rate) + 0 (Feature Flow Rate) = 39.02 (System Flow Rate)

4 Spa Jets N/A (No of Jets) x N/A (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)	N/A
Total all other loss	20.48
Total Dynamic Head (TDH)	30.08

Selected Pump and Main Drain Cover:

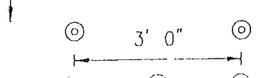
Pump selection VS+SVRS Pentair 011017 (Pump model and size in Horsepower) using pump curve for TDH & System Flow Rate

Main Drain Cover 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)

X 1 - 32" Waterway 640-132xv @ 175 gpm max 2/2

TDH Calculation Options
For each pump

Check one

- [x] 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) vs 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.

This form is the property of PE and may only be used in conjunction with my Residential Swimming Pool Specification Drawings or by others with my written permission.

2/27/14
Date

Michael S. Canto
CPC 1457306
352-332-7665

2-28-14
Date

COLUMBIA COUNTY BUILDING DEPARTMENT
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Code Compliance
PLANS EXAMR.

voice 352) 332 7665
Fax (352) 332 0766
mike@funstatepoolsinc com

Fun State Pools Inc.
352 • POOL

Michael Canto

www funstatepoolsinc com
3601 N W 97th Blvd • Gainesville Florida 32606

Swimming Pool Specification For:

Lacy | Sheri Crews
3452 SW CR 242
Lake City FL