



DAMMON

ENGINEERING, INC.

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Slidell, LA 70458
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March 16, 2018

Ms. Jie Gu P.E.,
Region IX Engineer
OPH

RE: Terra Bella Class C Swimming Pool
Covington, Louisiana

Ms. Gu,

In response to your review letter dated February 28, 2018 regarding the subject pool plans, the following is provided:

1. Please submit applicable pages of this office's "Engineering Services Permit Application."
Response: See attached form.
2. Please specify the water and sewer system's name which the pool will be connected with in drawings.
Response: See attached form from item number 1.
3. Please provide details for the proposed pedestal water feature.
Response: See revised detail on PL-2.1, attached.
4. Please specify the chemicals that will be used for disinfection and the targeted chlorine residual which will be maintained in the pool. Also please specify the means of PH control for the proposed pool.
Response: See revised sheet G-1.1 & Hayward automated pH Controller cut sheet, attached.
5. Please provide the total deck area.
Response: See revised comment Pool Design Data on sheet G-1.1.

If you have any questions, or require additional information, please feel free to call.

Sincerely,

David Dammon
Dammon Engineering, Inc.





State of Louisiana

Department of Health and Hospitals
Office of Public Health

Swimming Pool Project Application

SWIMMING POOL PROJECT			
Terra Bella Pool			
Terra Bella Community		St. Tammany Parish	
Public Pool Class ¹ : Class A (competition) <input type="checkbox"/> Class B (Public Recreation) XX Class C (semi/public use for lodgings) <input type="checkbox"/> Class D (all other public uses)			
Estimated Project Cost: \$600,000			
In what type of facility will the pool be located (i.e. hotel, condominium, etc.)? Condominium			
Public Water System (Source of Water): Parish		Is this an approved water source: X Yes <input type="checkbox"/> No	
Wastewater Disposed Into (Sewer System): Parish			
Type of Disinfection at Swimming Pool: Chlorine <input type="checkbox"/> Cyanuric Acid <input type="checkbox"/> Bromine X <input type="checkbox"/> Other: _Hypochlorite Solution			
Type of Disinfection at Public Water System (Source Water): : X Chlorine <input type="checkbox"/> Chloramines			
PROJECT OWNER INFORMATION			
Terra Bella Group LLC			
100 TerraBella Boulevard, Covington, LA 70433			
(985) 871-7171			
DESIGN ENGINEER INFORMATION			
David Dammon / Brian Mistich			
Dammon Engineering			
554 Old Spanish Trail		Slidell	LA 70458
info@dammomengineering			
POOL DIMENSIONS			
Main Pool Shape: Rectangle			
		Area (ft ²): 2,237	Perimeter (l.f.): 230 L.F.
Volume (ft ³): 8883 ft ³		Volume (gallons): 66,455 Gallons	
Swimming Pool Depth	Minimum Depth (ft):	Maximum Depth (ft):	
Pool Turnover (hours):			
POOL CONSTRUCTION MATERIALS			
Material: Concrete		Material Color: White	
Impervious: X Yes <input type="checkbox"/> No		Smooth Surface: X Yes <input type="checkbox"/> No	
POOL DECK			
Pool Deck Area (ft ²): 5,783.9 s.f.		Deck Material: Concrete	
Minimum Tread Depth (in): n/a		Minimum Deck Width (ft): 4ft	
Deck Drains to: X Perimeter Area Deck Drains			

Swimming Pool Specifications

Project Description: Terra Bella Pool

MAXIMUM USER LOAD CALCULATIONS	
Maximum Users in Shallow, Instruction, or Wading Areas (persons):	n/a
Maximum Users in Deep Area, not including Diving Areas (persons):	n/a
Maximum Users in Diving Area, per each diving board (persons):	n/a
Total Maximum User Load (persons):	111

CIRCULATION SYSTEMS		
Recirculating Pump:	TDH (ft): 40.6	Maximum Pump Capacity (GPM): 79
Backwash Pump:	TDH (ft): 5	Maximum Pump Capacity (GPM): 79
Maximum Water Velocity for: Discharge Piping (ft/sec):	8.1	Suction Piping (ft/sec): 5.2
Number of Inlets:	10	
Number of Outlets/Drains:	11	

POOL APPURTENANCES	
Diving Board (if none, write n/a):	n/a
Diving Equipment (if none, write n/a):	n/a
Recessed Treads (if none, write n/a):	n/a
Surface Skimmer System:	<input checked="" type="checkbox"/> Automatic Surface Skimmer <input type="checkbox"/> Perimeter-Type <input type="checkbox"/> Overflow Gutter
Heaters (if none, write n/a):	n/a
Lighting (if none, write n/a):	Pool deck estimated at 5784 s.f. x 2 watts/s.f. = 11,568 watts; 11568 watts x 20 lamp lumens/ watt = 231,360 lumens
Ventilation (for indoor pools) (if none, write n/a):	n/a
Lifesaving Equipment:	Yes
Security/Barriers:	Yes, fence
Sunning or Tanning Shelves (if none, write n/a):	Tanning Shelf
Underwater Seat Bench (if none, write n/a):	Yes



VGB SERIES

SUBMERGED, MULTIPLE AND SINGLE SUCTION OUTLET INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS FOR MODELS:

10AVRxxx, 10AVxxx, SUN18HPHxxx, WAV24xxx, 24xxx, 1216xxx, 914xxx, A8Rxxx, 8AVxxx, LP8AVxxx, RFS9xxx, RFS12xxx, P9xxx, P12xxx, P18xxx, P24xxx, WAV9xxx, WAV12xxx, WAV18xxx, A10RCFRxxx, 8FUWxxx, 10LTxxx, 10LTDxxx, 6PHPAxxx, 4HPxxx, 8MFxxx, R8MFxxx, 10MFxxx, 9MFxxx, R9MFxxx, 12MFxxx, R12MFxxx, 18MFxxx, R18MFNFxxx, A10RCFRxxx-V

(xxx = COLOR SUFFIX)

MEETS OR EXCEEDS ANSI/APSP 16-2011

ANTI-ENTRAPMENT/ANTI-VORTEX



READ AND FOLLOW ALL INSTRUCTIONS



▲ WARNING!

IMPROPER INSTALLATION OR USE OF THIS PRODUCT MAY PRESENT A RISK OF HAIR OR BODY ENTRAPMENT AND DROWNING. Install this equipment in accordance with the instructions provided. Use only with the components and mounting hardware provided. FAILURE TO FOLLOW THESE INSTRUCTIONS AND/OR USE WITH COMPONENTS NOT PROVIDED BY AQUASTAR POOL PRODUCTS AND INTENDED TO BE USED WITH THIS PRODUCT MAY RESULT IN IMPROPER POSITIONING OR FUNCTIONING OF SUCTION OUTLET AND MAY CAUSE SEVERE PERSONAL INJURY OR DEATH.

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

- If not a single, unblockable outlet, in the event of one suction outlet being completely blocked, the remaining suction outlets serving the system shall have a flow rating capable of the full flow of the pump(s) or the specific suction system. If in doubt about the rating and/or head loss curve of your system, consult a qualified pool or spa professional and/or your respective equipment manufacturer(s). Also, double-check with your local building/health authorities regarding single vs. multiple drain installations, etc.
- All sizes of connecting pipe are acceptable, pending velocity and GPM calculations. The larger, the better! DO NOT exceed maximum flow rate(s) of cover or pipe(s) flow rate(s), whichever is less.
- Replace cover and screws within five years.

SPECIAL NOTES:

- Pool finish should never exceed top of frame.
- Taper pool finish down and away from top (or lower) of frame.
- Top of grate should never be installed lower than the pool finish.
- Take special notice when retrofitting into an existing frame where possible existing multiple layers of re-plastering have created a concave situation, either chip or grind down old surface or install new frame at higher level. Use of bushing kit may also be required to achieve proper elevation.

MAXIMUM RECOMMENDED SYSTEM FLOW RATE BY PIPE SIZE

Pipe size	1½"	2"	2½"	3"
Flow rate in GPM	45	80	110	160

ALL MODELS LISTED BELOW = ANTI-ENTRAPMENT/ANTI-VORTEX AND FOR SINGLE OR MULTIPLE USE

MAX FLOW RATES (PER OUTLET) MOUNTING POSITIONS (xxx=COLOR SUFFIX)												
Model	WAV24xxx	24xxx	1216xxx (and R1216xxx)	914xxx (and R914xxx)	SUN18HPHxxx (min 6" pipe size)	10AVRxxx (with solid riser ring) (min 2" pipe size)	A8Rxxx (with solid riser ring) (min 2" pipe size)	10LTxxx (min. 2" pipe size)	10LTDxxx (min. 2" pipe size)	8AVxxx, RFS9xxx (with vented riser ring)	10MFxxx (min 2" pipe size)	8MFxxx (min 2" pipe size)
Floor	1444 GPM @ 1.3 fps	1531 GPM @ 1.4 fps	460 GPM @ 1.46 fps	560 GPM @ 2.1 fps	1000 GPM @ 3.1 fps	166 GPM @ 4.8 fps	145 GPM – 3" sump 140 GPM – sumpless @ 2.9 fps	60 GPM @ .7 fps	125 GPM @ 1.4 fps	88 GPM @ 2.0 fps	158 GPM @ 1.6 fps	166 GPM @ 3.2 fps
Wall	1444 GPM @ 1.3 fps	1531 GPM @ 1.4 fps	445 GPM @ 1.4 fps	300 GPM @ 1.2 fps	644 GPM @ 2.0 fps	96 GPM @ 2.8 fps	84 GPM @ 1.7 fps	NA	NA	70 GPM @ 1.6 fps	162 GPM @ 1.7 fps	113 GPM @ 2.2 fps
Model	WAV18xxx (with vented riser ring)	WAV12xxx (with vented riser ring)	WAV9xxx (with vented riser ring)	P9xxx (with vented riser ring)	P12xxx (with vented riser ring)	10AVxxx (with vented riser ring)	8FUWxxx (min 2" pipe size)	P18xxx (with vented riser ring)	P24xxx	A10RCFRxxx, A10RCFRxxx-V (min 2" pipe size) (sumpless)	R8MFxxx (min 2" pipe size)	9MFxxx (min 2½" pipe size)
Floor	628 GPM @ 1.1 fps	361 GPM @ 1.3 fps	224 GPM @ 1.5 fps	270 GPM @ 2.1 fps	360 GPM @ 1.5 fps	206 GPM @ 4.1 fps	110 GPM @ 2.2 fps	740 GPM @ 1.5 fps	1428 GPM @ 1.5 fps	170 GPM @ 1.7 fps	146 GPM @ 2.9 fps	258 GPM @ 2.3 fps
Wall	628 GPM @ 1.1 fps	361 GPM @ 1.3 fps	224 GPM @ 1.5 fps	270 GPM @ 2.1 fps	360 GPM @ 1.5 fps	96 GPM @ 1.9 fps	106 GPM @ 2.1 fps	740 GPM @ 1.5 fps	1428 GPM @ 1.5 fps	170 GPM @ 1.7 fps	130 GPM @ 2.6 fps	274 GPM @ 2.4 fps
Model	R9MFxxx (min 2½" pipe size)		12MFxxx (min 2½" pipe size)		R12MFxxx (min 2½" pipe size)		18MFxxx, R18MFNFxxx (min 3" pipe size)					
Floor	258 GPM @ 2.3 fps		274 GPM @ 1.2 fps		274 GPM @ 1.3 fps		293 GPM @ .6 fps					
Wall	274 GPM @ 2.5 fps		278 GPM @ 1.3 fps		278 GPM @ 1.3 fps		NA					

INSTALLATION LAYOUTS

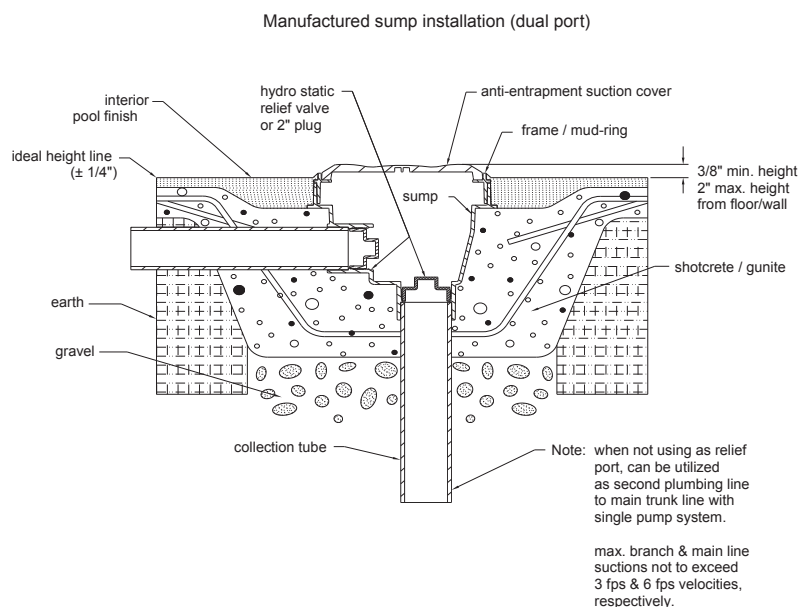
- Requires Phillips screw driver. Hand tighten only. Do not use electrical or air drills.
- See Fig. 1 for installation layout with manufactured sump
- See Fig. 2 for installation layout without manufactured sump (field-fabricated sump)
- Measure from underside of high point of the cover to the top of pipe(s) to determine proper sump depth.
- Top of all suction outlets shall not exceed 2" above pool floor or wall.

MANUFACTURED SUMP INSTALLATION (DUAL PORT)

IMPORTANT

- Single or multiple drain use
- Models: SB, DD (A), or DDSB (B) (SB = Std Sump Bucket, DD (A) = Deep Sump/Frame, DDSB (B)= Deep Sump Bucket) with 10AVRxxx, 10AVxxx, 10LTxxx, 10LTDxxx, 8AVxxx, LP8AVxxx, WAV9xxx, WAV12xxx, SUN9xxx, SUN12xxx, 1216xxx, 914xxx, A8Rxxx, 8FUWxxx, P9xxx, P12xxx, 8MFxxx, 9MFxxx, 10MFxxx, 12MFxxx, 18MFxxx
- NOTE: 8" round SB available in three styles: (6" deep)
 - Regular collar (frame) with side/bottom ports
 - Adjustable collar (frame) (AC) with side/bottom ports
 - Vinyl/fiberglass (V) with side/bottom ports
- NOTE: 9" and 12" square and 10" round DDSB (B, D, F) available in three styles: (12" deep)
 - Regular collar (frame) with two 2½" and 2" ports on bottom only (no side port) (B)
 - Regular collar (frame) with one 4" port on bottom only (no side port) (D)
 - Regular collar (frame) with one 6" port on bottom only (no side port) (F)

fig. 1

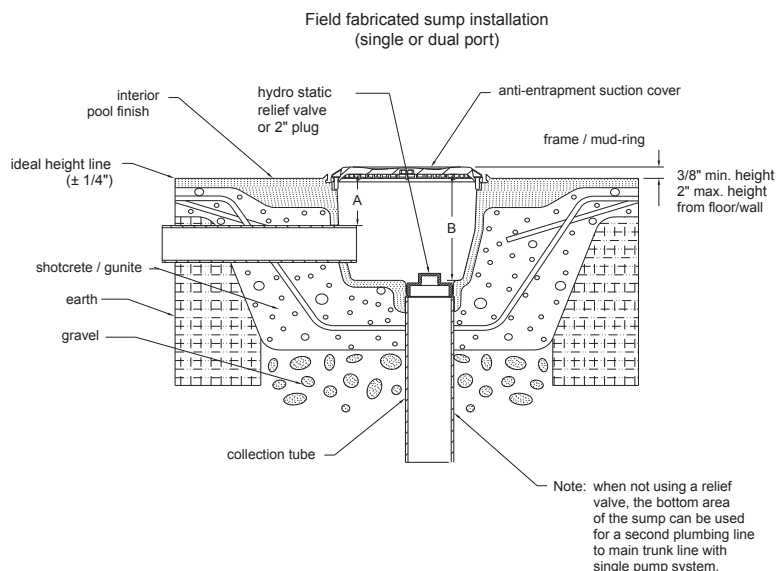


FIELD FABRICATED SUMP INSTALLATION (SINGLE OR DUAL PORT)

IMPORTANT

- At IAPMO and UL (nationally recognized labs), all AquaStar suction outlet covers have been tested with 3" deep sumps (unless otherwise indicated)
- A and/or B should be a min. 3" to bottom of cover. (except: SUN18HPHxxx, WAV18xxx, P18xxx, 18MFxxx – 6", WAV24xxx, P24xxx and 24xxx – 12", A8Rxxx at 140 GPM – floor / 84 GPM – wall, A10RCFRxxx – sumpless)
- Second line can be on bottom area
- Single or multiple drain use
- Models: 10AVRxxx, 10AVxxx, 8AVxxx, LP8AVxxx, WAV9xxx, WAV12xxx, P9xxx, P12xxx, P18xxx, P24xxx, WAV24xxx, 24xxx, RFS9xxx, RFS12xxx, WAV18xxx, 1216xxx, 914xxx, A8Rxxx, SUN18HPHxxx, A10RCFRxxx, 8FUWxxx, 10LTxxx, 10LTDxxx, 8MFxxx, R8MFxxx, 9MFxxx, R9MFxxx, 10MFxxx, 12MFxxx, R12MFxxx, 18MFxxx

fig. 2



For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

▲ WARNING! SUCTION ENTRAPMENT HAZARD

INCREASING PUMP SIZE WILL INCREASE FLOW. When in doubt, consult your pool and spa professional. NEVER use a pool or spa that has a missing or broken suction outlet cover. USING A POOL OR SPA WITH A MISSING OR BROKEN SUCTION OUTLET COVER CAN RESULT IN HAIR OR BODY ENTRAPMENT WHICH CAN CAUSE SEVERE BODILY INJURY OR DEATH. THE VACUUM IN SUCTION OUTLETS AND/OR SUCTION OUTLET COVERS WHICH ARE DAMAGED, BROKEN, CRACKED, MISSING OR UNSECURED CAN CAUSE SEVERE INJURY AND/OR DEATH DUE TO THE FOLLOWING ENTRAPMENT HAZARDS: HAIR ENTRAPMENT – Hair can become entangled in suction outlet cover. LIMB ENTRAPMENT – A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing or not securely attached can result in a mechanical bind or swelling of the limb. BODY SUCTION ENTRAPMENT – A negative pressure applied to a large portion of the body or limbs can result in an entrapment. EVISCERATION/DISEMBOWELMENT ENTRAPMENT – A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is damaged, broken, cracked, missing, or unsecured can result in evisceration/disembowelment entrapment. MECHANICAL ENTRAPMENT – There is a potential for jewelry, swimsuit, hair decorations, finger, toe or knuckle to be caught in an opening of a suction outlet cover resulting in mechanical entrapment. AFTER INSTALLATION OF FITTINGS, IF A GAP EXISTS BETWEEN POOL FINISH AND BASE OF COVER IT MUST BE FILLED IN WITH A TWO-PART EPOXY TO AVOID FINGER OR OTHER ENTRAPMENT.

▲ WARNING! TO REDUCE THE RISK OF ENTRAPMENT HAZARDS

If not an approved single, unblockable outlet, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall) must be installed a minimum of three feet (3') (1 meter) apart, as measured from center point to center point. Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas. If any suction outlets are located closer they shall be located on two different planes (i.e. one on the bottom and one on the vertical wall, or one each on two separate vertical walls). The maximum system flow rate shall not exceed the flow rating of any listed (per ANSI/APSP 16-2011) suction outlet cover installed. Never use pool or spa if any suction outlet component is damaged, broken, cracked, missing or not securely attached. Replace damaged, broken, cracked, missing or not securely attached suction outlet components immediately. In addition to two or more suction outlets per pump installed in accordance with latest APSP, IAF Standards and CPSC guidelines, follow all national, state and local codes applicable. Use only transitional (typically green) glues when attaching PVC pipe to ABS fittings. Use gray medium set glue when attaching PVC pipe to our PVC based skimmers and double deep sump buckets. In both cases, do not ever use blue glue or related hot glues, clear glues or any fast setting cement.

WARNING! – Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in an increased potential for suction entrapment as described above.

WARNING! – Failure to keep suction outlet components clear of debris, such as leaves, dirt, hair, paper and other material can result in an increased potential for suction entrapment as described above.

WARNING! – Suction outlet components have a finite life, the cover/grate should be inspected before each use of facility and replaced at least every five years or if found to be damaged, broken, cracked, missing, not securely attached or missing screws. **DO NOT** use facility until corrected!

As the manufacturer, AquaStar Pool Products, Inc., hereby certifies that their suction outlet and drain covers meet or exceed the requirements of the Virginia Graeme Baker Pool & Spa Safety Act, VGB 2008 and ANSI/APSP 16-2011 standards and safety regulations as set forth by the Consumer Products Safety Commission. A copy of this certificate of compliance is available on AquaStar Pool Products Inc.'s website under news & information: www.aquastarpoolproducts.com

A Safe Drain is No Accident™



P 877-768-2717 F 877-276-POOL info@aquastarpoolproducts.com www.aquastarpoolproducts.com



SUMPLESS, BULKHEAD POOL & SPA SUBMERGED SUCTION OUTLET INSTRUCTIONS

VGB SERIES

IMPORTANT ADDITIONAL SAFETY INSTRUCTIONS FOR
4HPxxx and 6HPHAxxx
(xxx = COLOR SUFFIX)



READ AND FOLLOW ALL FOUR PAGES OF INSTRUCTIONS



MEETS OR EXCEEDS ANSI/APSP 16-2011
ANTI-ENTRAPMENT/ANTI-VORTEX

MAX FLOW RATES (PER OUTLET) MOUNTING POSITIONS (xxx=COLOR SUFFIX)					
Model	4HPxxx	4HP TOTAL OPEN AREA	6HPHAxxx (2")	6HPHAxxx (1½")	6HPHA total open area
Floor	N/A	N/A	224 GPM @ 6.3 fps	177 GPM @ 5.9 fps	10.4 sq. in.
Wall	56 GPM @ 3.5 fps	5.2 sq. in.	224 GPM @ 6.3 fps	122 GPM @ 3.4 fps	10.4 sq. in.

SPECIAL NOTES FOR HP FITTINGS

- 6HPHA max flow is 224 GPM allowed for both floor and wall with 2" or greater pipe sizes.
- When 1.5" pipe size is used, max flow rate allowed for the 6HPHAxxx is 177 GPM and 122 GPM for floor and wall respectively.
- 4HP max flow is 56 GPM allowed only for wall applications.
- No sump is required. AquaStar's SumpleSS Series is designed and tested for safe flush-mount installations to tile, fiberglass, acrylic, vinyl and steel as well as plaster, pebble, concrete, etc.
- ABS bulkhead adapter fitting must be securely attached to plumbing with proper glue. Use ABS to PVC transitional glues (such as Oatey® Weld-on® and other green NSF glues).
- **DO NOT** use clear, "hot", "blue" or any fast set glues with any AquaStar pool products.
- When retro-fitting, extra secure installations can be obtained by applying wet and dry epoxy, silicone, etc., to underside of base plates.
- After installation of bulkhead adapter fittings, if a gap exists between pool finish and base of cover it must be filled in with a two-part epoxy to avoid finger or other entrapment.

6" ROUND HOCKEY PUCK SUMPLESS SUCTION OUTLET COVER, HYDROAIR/ITT REPLACEMENT

VGB Series

The Aquastar line of suction outlet covers, compliant with the Virginia Graeme-Baker Pool and Spa Safety Act (ANSI/APSP 16-2011 and NSF/ANSI 50-2009a)

FEATURES

For single or multiple drain use in gunite, steel, fiberglass and tile pools and spas (see installation instructions)

Single – sumpless

Floor/wall (2" pipe): 224 GPM at 6.3 fps

Floor (1½" pipe): 177 GPM at 5.9 fps

Wall (1½" pipe): 122 GPM at 3.4 fps

Floor/wall: 53.3 GPM at 1.5 fps

Floor/wall: 35.5 GPM at 1.0 fps

10.4 square inch opening

Trademarked VGB compliance button easily identifies VGB 2008 compliant cover from on deck and underwater

#316 stainless steel screws

Manufactured from superior UV-resistant engineered polymers

All components meet or exceed ANSI/APSP 16-2011 and NSF/ANSI 50-2009a national standards and ASTM G154 UV testing exposure

See next page for eight adapter plates sold separately, available for sumpless connections to 1022s, 1.5" female adapters, 1.5" and 2" inside and outside slip and threads as well as existing HydroAir wall fittings #10-6015S and 10-6304S (both with brass inserts)

Replace every five years from the date of installation

25 per case

No sump required!



Part # 6HPxxx

STANDARD COLORS

6HPHA101 – White

6HPHA102 – Black

6HPHA103 – Light Gray

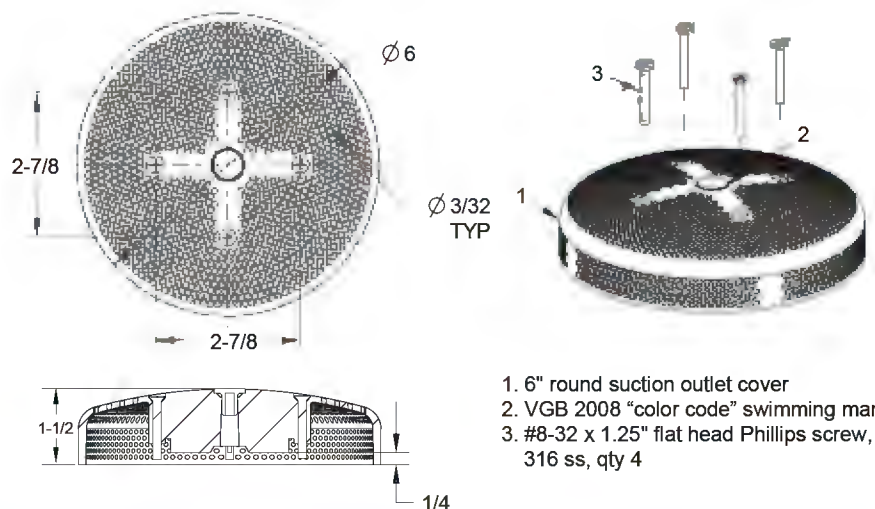
6HPHA104 – Blue

6HPHA105 – Dark Gray

6HPHA108 – Tan

Can replace MaxFlow covers used with p/n 6HA25T20Sxxx

VGB 2008 Compliant



1. 6" round suction outlet cover
2. VGB 2008 "color code" swimming man
3. #8-32 x 1.25" flat head Phillips screw, 316 ss, qty 4

Retrofits to Sta-Rite/Pentair #8011 and AquaStar #4RNDxxx equalizer

ADDITIONAL PRODUCT CONFIGURATIONS FOR 6HPHAXXX (sold separately) 25/case

STANDARD COLORS 101 102 103 104 105 108

Code Key:

6 = for 6HPHAXXX
HP = "hockey puck"

xxx = color
(i.e. 101 = white)

15 = 1 1/2", 20 = 2"
25 = 2 1/2"

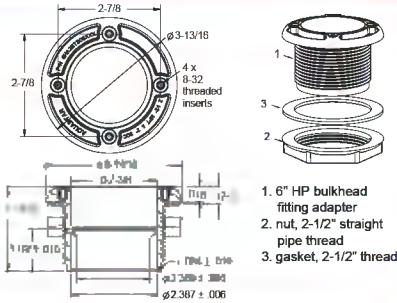
Soc. = socket, slip
Spg. = spigot, slip

SI = Slip Insider
T = Thread

6" Bulkhead Adapter with 1 1/2" Thread and 2" Socket for Fiberglass/Steel, with Gasket and 2 1/2" Locking Nut (sold separately)



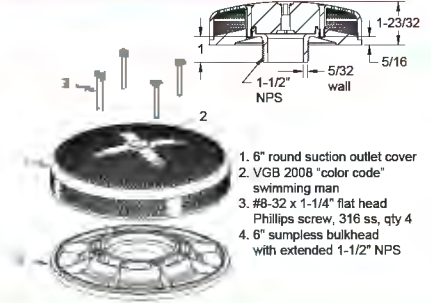
Part #
6HA25T20Sxxx



6" Bulkhead Adapter with Extended 1 1/2" Threaded Sumpless Fitting (sold separately)

Use with flush mount 1 1/2" FPT, does not fit 1022 female adapters

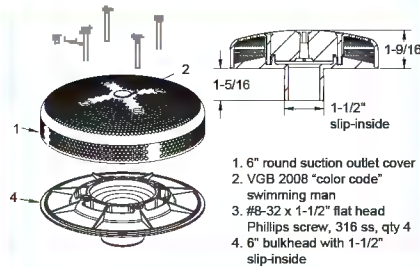
Part #
6E15Txxx



6" Bulkhead Adapter with 1 1/4" Slip-Insider Sumpless Fitting (sold separately)



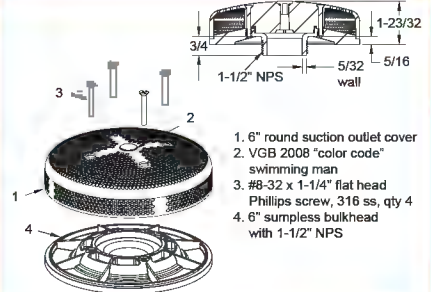
Part #
615SIxxx



6" Bulkhead Adapter with 1 1/2" Threaded Sumpless Fitting (sold separately)

Fits 1022 female adapters

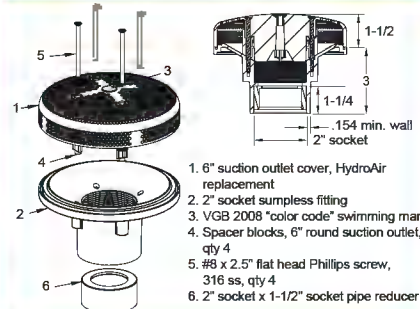
Part #
615Txxx



6" Bulkhead Adapter with 2" Socket Sumpless Fitting (sold separately)



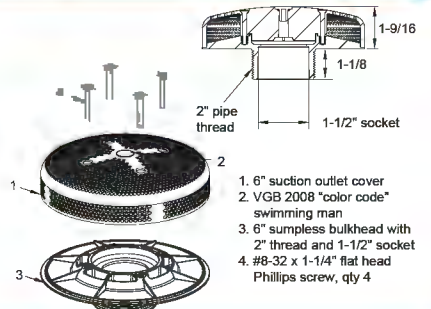
Part #
RNDxxx



6" Bulkhead Adapter with 2" Threaded x 1 1/2" Socket Sumpless Fitting (sold separately)



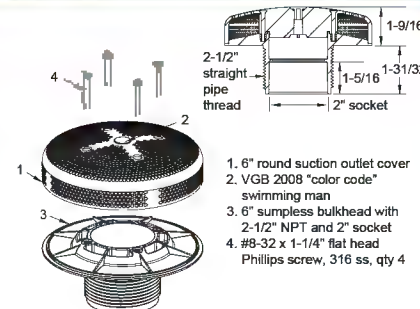
Part #
620T15Sxxx



6" Bulkhead Adapter with 2" Threaded x 2" Socket Sumpless Fitting (sold separately)



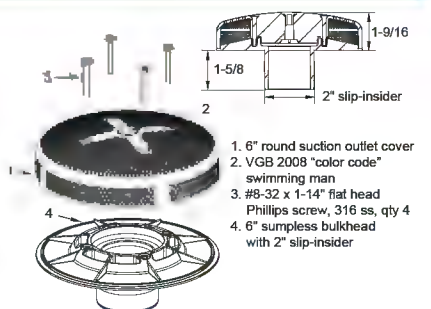
Part #
625T20Sxxx



6" Bulkhead Adapter with 2" Slip-Insider Sumpless Fitting (sold separately)

Also available as 1 1/2" slip Insider p/n 615SIxxx

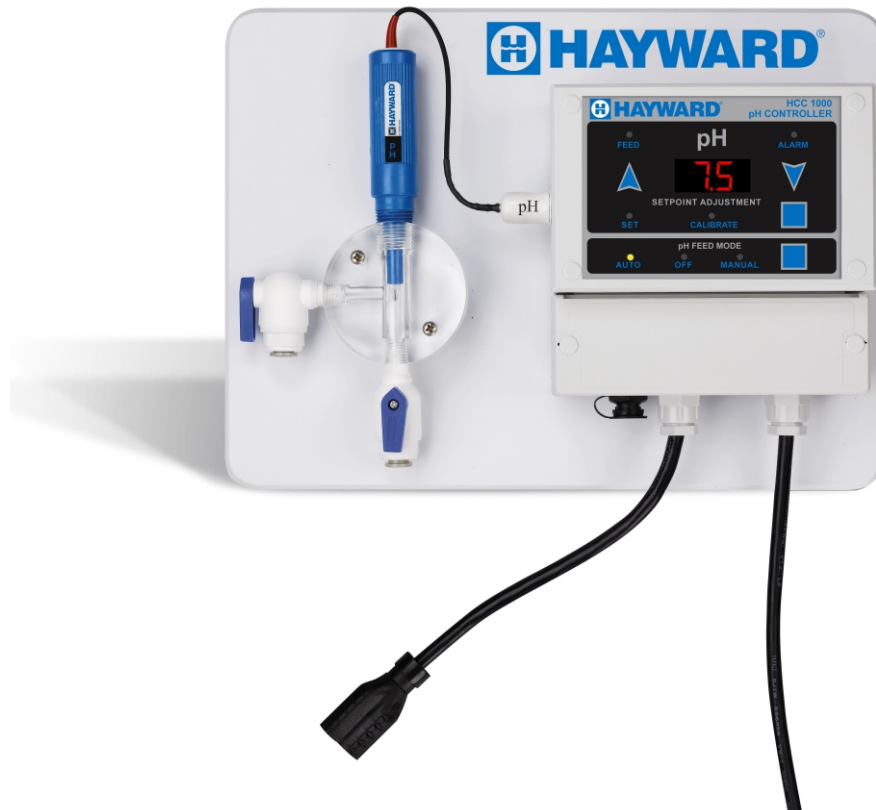
Part #
620SIxxx





HCC 1000

AUTOMATED CONTROLLER



OWNER'S MANUAL

INSTALLATION
OPERATION
MAINTENANCE
SPECIFICATIONS

FOREWORD

Congratulations on your wise investment. The product you have selected from the Hayward® line of automated controllers should provide you with substantially reduced chemical maintenance, improved compliance with Health Department operating standards, chemical cost savings, and many years of reliable operation. Hayward® controllers incorporate state of the art microprocessor-based design technology to provide sophisticated control functions at an affordable price.

Although Hayward® controllers are relatively simple to install, please take the time to read this entire manual, compare package contents with the parts list, and gather all tools required before beginning installation. Improper installation may void the warranty and create unnecessary hazards. Properly preparing for installation will also reduce facility down-time.

For the purposes of this manual, it is presupposed that the installer is familiar with the physical characteristics of the pool or spa to be automated. As is the case when installing any filtration system component, all recirculating pumps, heaters, etc. need to be turned off prior to installation of the controller. If the filtration system is located below water level, additionally adjust all valves required to eliminate pressure from the system.

Physically, installation of a Hayward® controller is no more challenging than installation of a chemical feeder. Any swimming pool contractor or maintenance engineer should have the tools and knowledge to perform the installation. Our technical support line can also be used to answer any questions pertaining to controller installation.

Remember that your new Hayward® controller is not a substitute for performing and recording manual water testing in conformance with your state or local health department regulations. Never operate a water chemistry controller without a flow sensor, power interlock, or other means of ensuring that chemicals will not be fed without proper filtration system recirculation.

Congratulations on your purchase and welcome to the world of chemical automation. Please complete and return your warranty registration card today.

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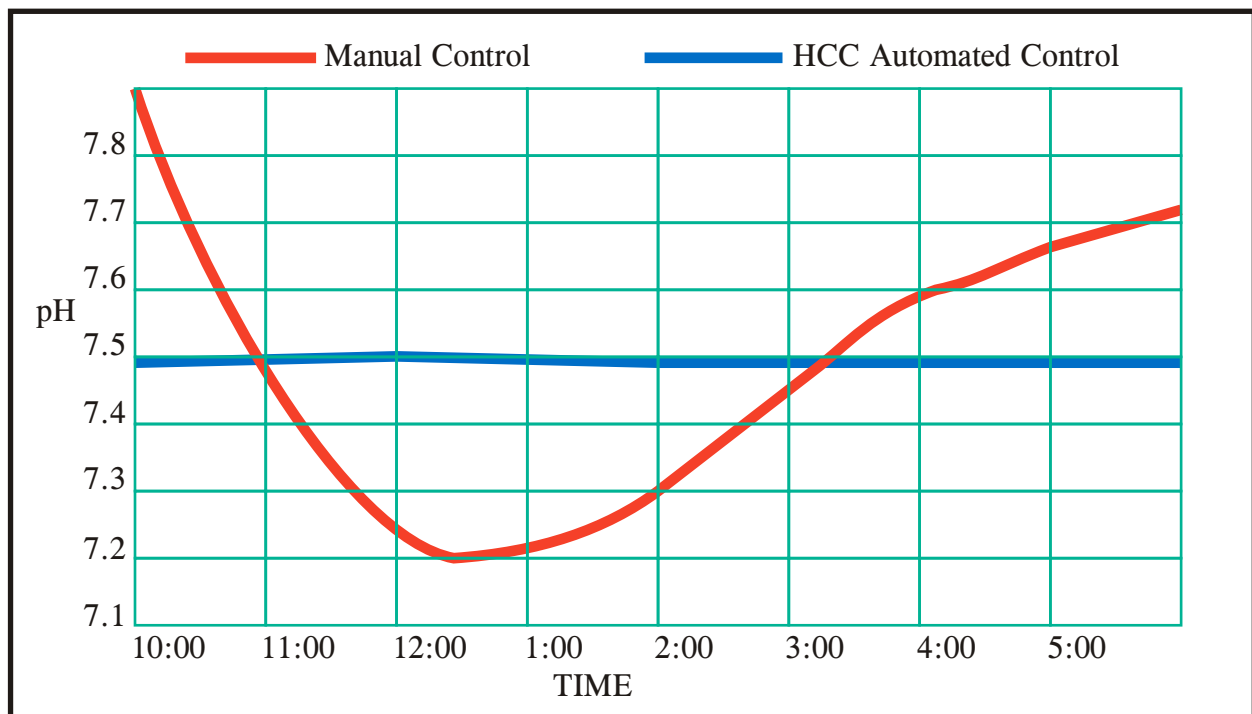
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SECTION 1. CHEMICAL AUTOMATION WITH THE HCC 1000

A pool operator typically checks and adjusts pool or spa water chemistry hourly at best. The HCC 1000 continuously monitors pH, constantly adjusting the feeding of chemicals on a basis proportional to the demand. The results include elimination of "human error", accurate and reliable maintenance of chemical levels twenty-four hours a day, compliance with safe water chemistry standards, reduced burden on operating staff, and a reduction of chemical usage and costs.

The following graph (Illustration 1.) compares typical pH levels when chemistry is adjusted manually versus automatically with the HCC 1000 controller.

ILLUSTRATION 1.
MANUAL -VS- AUTOMATED CONTROL



SECTION 2.

COMPONENTS OF A HCC 1000 AUTOMATED SYSTEM

The following is a description of the components incorporated in a typical HCC 1000 controller system:

The Professional-Series pH Sensor samples water from the filtration system and sends signals to the controller indicating the acidity of the water. The ideal pH range for pools and spas is 7.4 - 7.6. The HCC 1000 controller is preset from the factory to maintain pH 7.5. If pH is maintained below 7.4 (too acidic), eye irritation, corrosion of equipment, and damage to the pool or spa surface can occur. If pH is maintained above 7.6 (too alkaline), sanitizer activity is reduced, water may become cloudy, and eye irritation may result.

The Flow Sensor (required) monitors the rate of flow across the pH sensor and signals the controller to disable automated chemical feeding during periods when the filtration system is off or low recirculation flow is detected.

The Flow Cell provides a convenient location for mounting the pH sensor while ensuring ideal hydraulic conditions to maximize sensor performance and life.

The HCC 1000 controller unit scans and interprets the signals from the pH sensor, displays water quality readings in digital format, and activates chemical feeder in proportion to the demand required to maintain the pH setpoint level. The unit incorporates audible and visual safeguard alarms for out of range conditions, calibration adjustment for pH, and mode selections to manually feed or disable feeding. The HCC 1000 controller unit also features an internal micro-computer for unsurpassed accuracy, adaptability, and ease of use. All user-entries and adjustments are made through the touch-screen interface front panel.

SECTION 3. IMPORTANT SAFETY INFORMATION

IMPORTANT SAFETY INFORMATION

1. **WARNING** - Important safety information is contained throughout this manual. Read complete instructions prior to installation.
2. **WARNING** - Risk of Electric Shock. Connect controller only to a grounding type receptacle protected by a ground-fault circuit interrupter (GFI). CAT Controllers recommends installation to a dedicated GFI circuit breaker performed by a licensed electrician.
3. **WARNING** - Disconnect power before servicing. Other than the fuses, there are no user serviceable parts inside the controller.
4. **WARNING** - All power cords should be inspected frequently. Any damaged power cords must be replaced immediately to reduce the risk of electric shock. Never operate a controller without functional flow protection.
5. **WARNING** - Installation requires a properly located GFI protected receptacle. Never use an extension cord for electrical connections to the controller.
6. **WARNING** - Always mount controller in a safe area not subject to damage by moving objects. Never bury controller power cords.
7. **WARNING** - Any person using, adjusting, or monitoring the controller must be at least 18 years of age and be familiar with these instructions and the contents of this manual.
8. **WARNING** - Always take and record manual water chemistry readings in conformance with Health Department requirements. Although automated controllers are a great aid in maintaining healthy water quality, controllers are not a substitute for manual water testing with an accurate test-kit.
9. **WARNING** - Always read and become familiar with Material Safety Data Sheets (MSDS) and safe handling instructions for all chemicals used with the controller.
10. **Caution:** The automatic controller should not be installed where it is accessible to the public.
11. Over Feed Timers prevent potentially dangerous, unintentional, dispensing of chemicals. Hayward recommends always having the "Over Feed Time Out" functions enabled as a precautionary measure. By disabling the "Over Feed Time Out" the over feeding of chemicals could occur and create unsafe water chemistry conditions. Over feeding chemicals is dangerous and could potentially harm patrons.

KEEP THIS MANUAL FOR FUTURE REFERENCE

SECTION 4.

PACKAGE CONTENTS

Please unpack your new controller system carefully. Do not use a razor or sharp instrument to remove contents. Report any shipping or handling damage immediately to your shipping company. Enclosed in the packaging you should find all of the following:

- (1) HCC 1000 Water Chemistry Controller
- (1) Professional Series pH Sensor with 24" Cable and BNC Connector
- (1) BNC Connector Protective Covers (Remove to Connect Sensor)
- (1) Sensor Storage Container
- (1) HCC 1000 Owner's Manual
- (1) PVC Backboard with Mounting Holes and Stainless Hardware
- (1) Round Machined Acrylic Flow Cell assembled with:
 - (2) 1/4" NPT x 3/8" Tubing Parker Ball Valves
- (1) Pressure Flow Switch with Cable
- (1) 30' Roll, Black Poly Installation Tubing (3/8" OD)
- (2) 1/4" NPT x 3/8" Tubing True-Seal Connectors

Before commencing installation, please confirm that items listed above have been included. Please report any shortages immediately to the factory.

SECTION 5.

INSTALLATION INSTRUCTIONS

The following tools are recommended for installation:

- Drill (Cordless preferred)
- 7/16" Drill Bit
- 1/4" NPT (National Pipe Tapered) Tap
- Masonry Drill Bit & Anchors (if required)
- 13/16" Wrench or Channel-Lock Pliers.

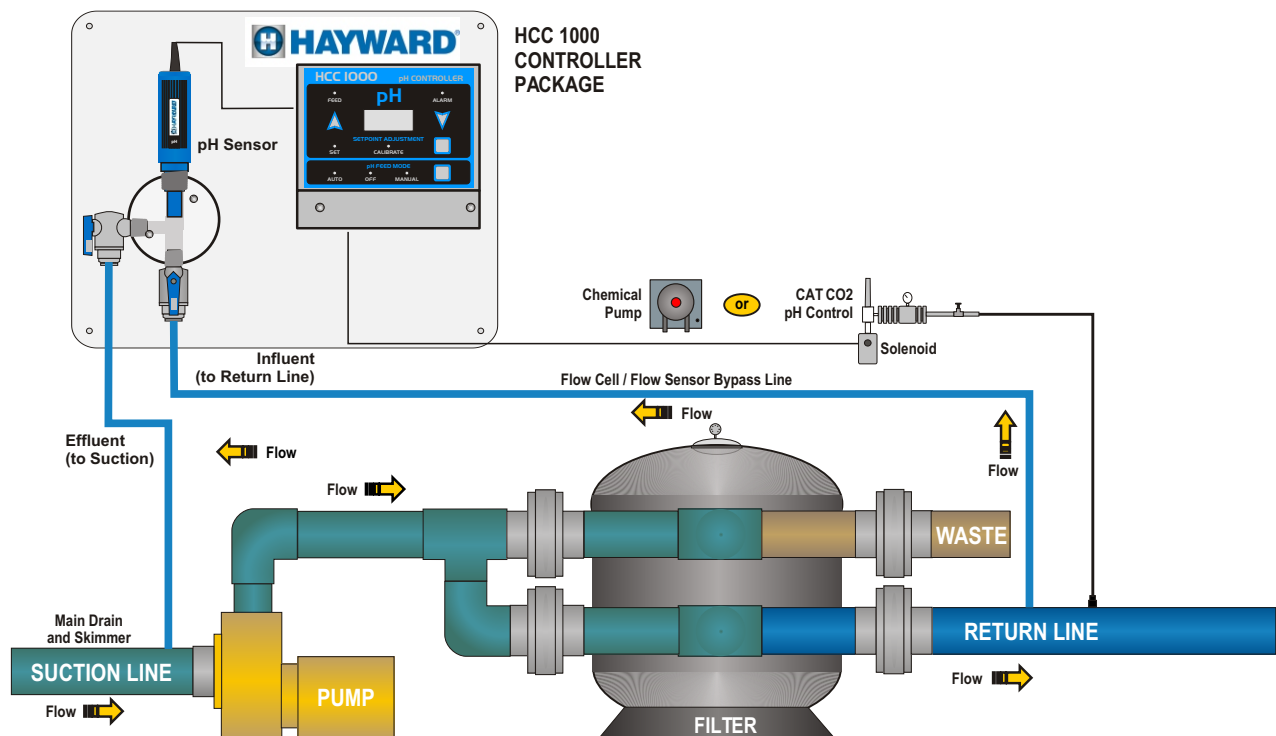
INSTALLATION PROCEDURES

The key to a successful flow cell installation is in the plumbing. A pressure differential is required to allow clean, untreated water to pass through the cell and across the sensor. We recommend using a pressure-suction "loop" line.

1. Turn off heater, chemical feeders, pump, and any other related equipment. Relieve pressure from filtration system.
2. Select a convenient mounting location for the controller unit which will meet the following criteria:
 - A. Facilitates a combined (influent and effluent) maximum tubing run of 30'.
 - B. Located a minimum of ten feet from pool or spa.
 - C. GFI protected power source available.
 - D. Easily accessible to pool or spa operator.
 - E. Away from corrosive materials and physical hazards.
3. Securely mount Controller or PVC Backboard on vertical wall.
4. Drill and tap a 1/4" NPT port at a location just down-stream of the filter, but up-stream from any chemical injection point. Install a tubing connector, and run flex tubing to the influent flow cell port.
5. Drill and tap a 1/4" NPT port at a location subject to vacuum or reduced pressure. Install the remaining tubing connector and run flex tubing to the effluent flow cell port.
6. Cut a 3" to 6" length of flex tubing and insert into the sample stream port.
7. Remove pH sensor from the plastic storage bottle and save bottle and storage fluid for future use. Apply teflon tape and thread sensor into flow cell.

8. Remove BNC protective cover from left side of controller unit and store for future use. This cover protects the controller unit from electro-static discharge (ESD) and should be used whenever handling or transporting the controller unit.
9. Connect the pH and Flow sensor cables to the controller unit as labeled. Sensor cables are constructed from a specialized material - never cut or splice.
10. If new or additional chemical feeders are to be used with the controller, install according to manufacturers instructions at this time.
11. Connect chemical feeder to the controller as labeled.
12. Check all electrical and mechanical connections. Resume filtration system operation and check for any leaks.

ILLUSTRATION 2. HCC 1000 INSTALLATION DIAGRAM



ALL CHEMICALS MUST BE INJECTED DOWN STREAM FROM HEATER & FLOW CELL

SECTION 6.

PREPARING WATER CHEMISTRY

Now that your new controller has been physically installed, water chemistry should be tested and adjusted prior to initiating automated control of the pool or spa. Confirm that your pool or spa water conforms to the following ranges before powering on and setting up the HCC 1000.

TEST	MINIMUM	IDEAL	MAXIMUM
pH	7.2	7.5	7.8
Free Chlorine (PPM)	1	2	3
Bromine (PPM)	2	3	4
Cyanuric Acid (PPM)	0	-	100
ORP (mV)	650	-	-
Total Alkalinity	80	-	120
Calcium Hardness	200	-	400

The above table indicates generally accepted guidelines. Always maintain water chemistry according to standards set by your local or State Health Department.

Hayward® strongly recommends establishing desired pH, sanitizer residual, calcium hardness, total alkalinity, temperature and cyanuric acid levels prior to initiating automated control of the pool or spa.

SECTION 7. SETTING AND OPERATING THE HCC 1000

Once desired start up chemistry parameters have been established, you are ready to set the HCC 1000 to automatically maintain pH. Please refer to Illustration 3 for controller unit button designations. Button designations appear in bold type.

Selecting Acid or Base Feed

The HCC 1000 is preset from the factory to operate in the acid feed mode (when pH exceeds the setpoint, the pH chemical feeder is activated). If the sanitizer used at your pool or spa causes the pH to decrease you must select base feed mode. To switch the controller between acid feed and base feed modes, perform the following steps.

1. Press and hold the **Hidden Button (#1)** for five seconds to enter advanced setup mode.
2. Scroll to pFD and press the enter key. Scroll to select A for acid feed or B for base feed. Press the Enter key to set your selection, then press the **Hidden Button (#1)** again to return to normal operating mode.

As the unit powers on, the digital pH readout will display an "A" or "B" indicating whether acid feed or base feed mode has been activated.

Calibrating pH

Readings from the HCC 1000 are far more accurate than those obtained from most liquid test standards. To match manual water testing results or compensate for a depleted or unclean pH sensor, the pH channel of the controller may be calibrated as follows:

1. Press the **pH Setpoint Adjustment Button (#4)** twice, illuminating the green "CALIBRATE" LED.
2. Press the arrow-shaped **pH Channel Increase Button (#2)** or **pH Channel Decrease Button (#3)** until the digital display matches your manual pH test reading.
3. The controller will automatically return to the normal operating mode after twenty seconds, storing any changes.

Changing the pH Setpoint

The HCC 1000 is preset from the factory to maintain pH at 7.5. To set pH control at a different level, perform the following:

1. Press the **pH Setpoint Adjustment Button (#4)** until the green "SET" LED is illuminated.
2. Press the arrow-shaped **pH Channel Increase Button (#2)** or **pH Channel Decrease Button (#3)** until the digital display matches your desired pH control level.
3. The controller will automatically return to the normal operating mode after twenty seconds, storing any changes.

Manually Activating pH Feed

To manually enable the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the green "MANUAL" LED is illuminated. The chemical feeder will operate continuously for 30 minutes, and then automatically revert to "Auto" to prevent accidental over-feeding.

Manually Disabling pH Feed

To manually prevent operation of the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the red "OFF" LED is illuminated. Automatic pH feeding will be disabled. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

Automatically Controlling pH Feed

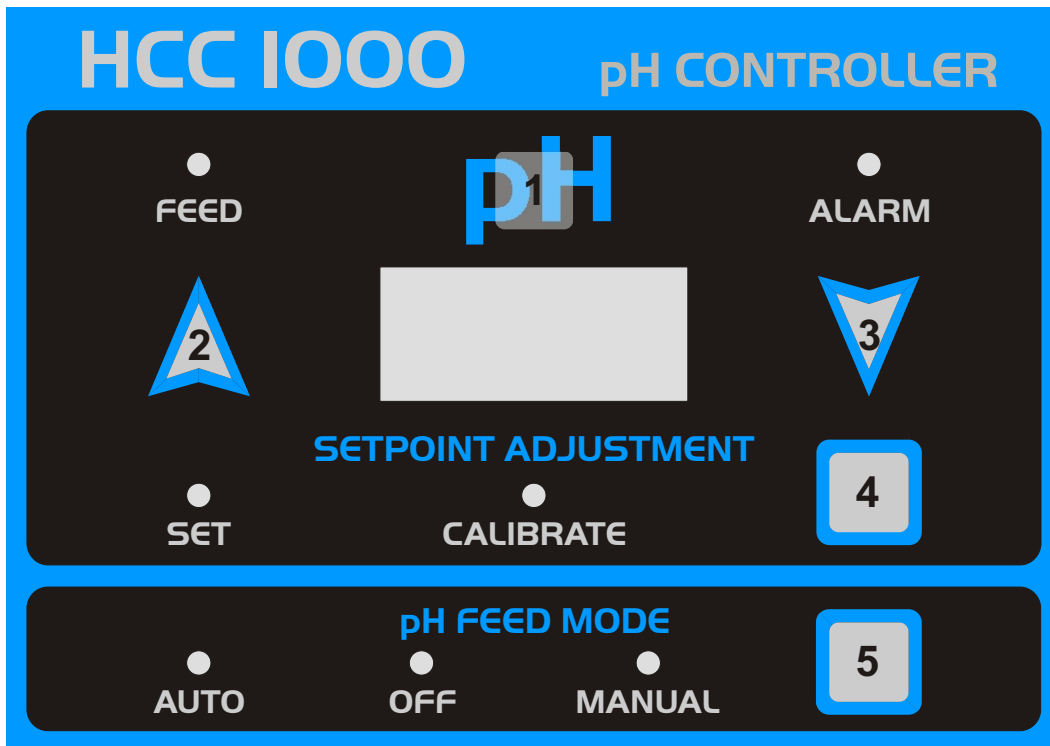
For automated control of the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the green "AUTO" LED is illuminated. The chemical feeder will operate automatically in proportion to chemical demand. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

About Proportional Feed

The HCC 1000 features an advanced proportional feed algorithm which constantly analyzes demand for chemicals and initiates feeding in intervals based on the relationship between setpoint and actual water sample values. This feature is highly valuable in maintaining precise control of water chemistry in most applications.

**ILLUSTRATION 3.
HCC 1000 SWITCH AND KEYPAD FUNCTIONS**

BUTTON DESIGNATION	DESCRIPTION
1	Hidden Button (Located Behind "pH" Text)
2	pH Channel Increase Button
3	pH Channel Decrease Button
4	pH Channel Setpoint Adjustment Button
5	pH Channel Mode Selection Button



SECTION 8.

Advanced (Dealer) Setup Options

The HCC 1000 offers a host of advanced options to ensure compatibility with a wide variety of applications. The advanced programming menu contains features which are usually implemented during initial dealer setup and do not need to be routinely changed by the operator.

Enhanced No-Flow Alarm

The no-flow alarm displays the prompt on the LED display, in addition to activating the pH Alarm indicator and sounding the audible alarm:

no Flow

Power On Display

At power on, the controller displays the pH feed mode and firmware version number. The pH feed mode is displayed on the LED display:

A

A Acid feed selected.

b Base feed selected.

The firmware version number is displayed on the ORP channel LED display:

6.12

Firmware version number (or later).

Entering Advanced Setup Mode

Find the **Hidden Button** (#1) located behind the large pH text over the pH digital display.

1. Press and hold the **Hidden Button** (#1) for five seconds to enter advanced setup mode.
2. Press the **Up** (#2) and **Down** (#3) arrow buttons to scroll through programming options.
3. Press the **Enter Button** (#4) to make a selection.

pH Feed Mode (Acid or Base Feed)

P.F d pH Feed. Selects the condition under which the pH feed output is activated.

A Acid (default). pH feed output is activated when the measured pH is greater than the pH setpoint, indicating the need to feed acid to decrease the pH of the water.

b Base. pH feed output is activated when the measured pH is less than the pH setpoint, indicating the need to feed base to increase the pH of the water.

pH Proportional Feed

P.P.F pH Proportional Feed. Selects either fixed setpoint or proportional control.

OFF Off. The pH feed output is activated based on a simple above or below setpoint decision. When the measured pH value is less than or equal to the pH setpoint (pH Feed: Acid selected) or greater than or equal to the pH setpoint (pH Feed: Base selected) the pH output feed is turned off. Otherwise, the pH feed output is turned on.

On On (Default). The pH feed output is activated based on the difference between the pH setpoint and the measured pH value. As the difference increases, the duration the pH feed output is turned on increases to 20, 30, 40, and 50 seconds of the 60 second cycle, and then the pH feed output is turned on continuously.

pH Overfeed Timer

Over Feed Timers prevent potentially dangerous, unintentional, dispensing of chemicals. Hayward recommends always having the "Over Feed Time Out" functions enabled as a precautionary measure. By disabling the "Over Feed Time Out" the over feeding of chemicals could occur and create unsafe water chemistry conditions. Over feeding chemicals is dangerous and could potentially harm patrons.

P.O.F pH Overfeed Timer. When Off is selected, the pH feed output will remain activated as long as a pH feed condition is indicated. When any other selection is made, an overfeed limit timer is enabled on the pH feed output. After the pH feed output has been turned on for a period of time greater than this limit, the pH channel is turned off and placed into an overfeed alarm condition which must be manually reset.

If pH Proportional Feed: On has been selected, the pH feed output must be on continuously for the overfeed time limit, rather than in the part of the proportional feed cycle in which the pH feed output is on for only a portion of the 60 second proportional feed cycle.

After the pH feed channel is placed into the overfeed alarm condition, the pH channel is turned off and the pH Feed Mode indicator flashes rapidly to indicate the alarm. Press the pH Feed Mode button to return the pH channel to the off, manual or automatic feed mode. This will reset the pH overfeed alarm and restart the overfeed timer. The pH overfeed alarm will also be reset if the controller is powered off and then back on.

The pH overfeed timer is disabled when the pH Feed Mode button is used to place the pH channel in the manual feed state.

OFF Off - The pH feed output will remain on for an unlimited amount of time.
15 15 Minutes.
30 30 Minutes.
60 60 Minutes (1 Hour).
120 120 Minutes (2 Hours).
180 180 Minutes (3 Hours).
240 240 Minutes (4 Hours)- default.

pH Low Alarm Limit

P.AL pH Alarm Limit Low. Sets the low alarm point for the pH channel. When the measured pH value is less than this limit, the audible alarm will be activated and the pH feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured pH value returns to within the non-alarm range.

6.8 Use the UP and DOWN buttons to select a value between 6.0 and 9.0 pH. The value must be less than the pH alarm high value. The default value is 6.8 pH.

pH Alarm High Limit

P.AH pH Alarm Limit High. Sets the high alarm point for the pH channel. When the measured pH value is greater than this limit, the audible alarm will be activated and the pH feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured pH value returns to within the non-alarm range.

8.2 Use the UP and DOWN buttons to select a value between 6.0 and 9.0 pH. The value must be greater than the pH alarm low value. The default value is 8.2 pH.

Clear All Programming and Restore Factory Defaults

[F] Factory Clear. Returns all controller operating parameters to their default values.

Demonstration Mode

d E o Places the controller in Demo Mode for showroom display, presentations, etc.

Audible Alarm (Beeper)

b P r The Beeper setting allows the audible alarm to be enabled (default) or disabled.

Serial Interface

S r l The HCC 1000 includes a standard RS232 serial interface. A header assembly and cable are required to connect.

O n l Online Communications. Use this selection when the controller is attached to a PC or building automation system.

P r n Printer (default). Use this selection when the controller is attached to an optional Serial Printer to make a hard-copy record of controller operating parameters. The printer is supplied with a cable to connect it to the controller. The Serial Printer prints one data record at 15 minute intervals. Data recorded includes pH measured values, and the feed output and alarm status.

When all desired settings have been entered, press the Hidden Button or wait 30 seconds and the controller will return to default operating mode

SECTION 9.

DISPLAY FUNCTIONS

Please refer to Illustration 4 with reference to designations of the various LED indicator lights on the front panel. Please note that for enhanced viewing the HCC 1000 features a "dead-front" display panel, so only illuminated indicators will be visible to the user. All lights and indicators are activated during power-on.

pH Feed Indicator (#1)

This green LED is illuminated whenever the pH chemical feeder is automatically or manually activated.

pH Alarm Indicator (#2)

Illumination of this red indicator is accompanied by an audible alarm and indicates that pH is outside of the safe operating range. Check that the pH chemical feeder is functioning properly and that an adequate chemical supply is available.

pH Digital Display (#3)

The red digital numeric display of the pH channel normally indicates the current pH of the pool or spa water (as calibrated) passing through the filtration system. Pressing the **pH Setpoint Adjustment Button** until the red "SET" LED is illuminated causes the pH setpoint to be displayed.

pH Setpoint Adjustment Mode Indicator (#4)

This green LED is illuminated whenever the controller is in the pH setpoint adjustment mode. Setpoint adjustment is allowed only when this LED is illuminated.

pH Calibrate Mode Indicator (#5)

This green LED is illuminated whenever the controller is in the pH calibration mode. Calibration of the pH display is allowed only when this LED is illuminated.

pH Automatic Control Indicator (#6)

This green LED is illuminated when pH is under automated control.

pH Manual Off Indicator (#7)

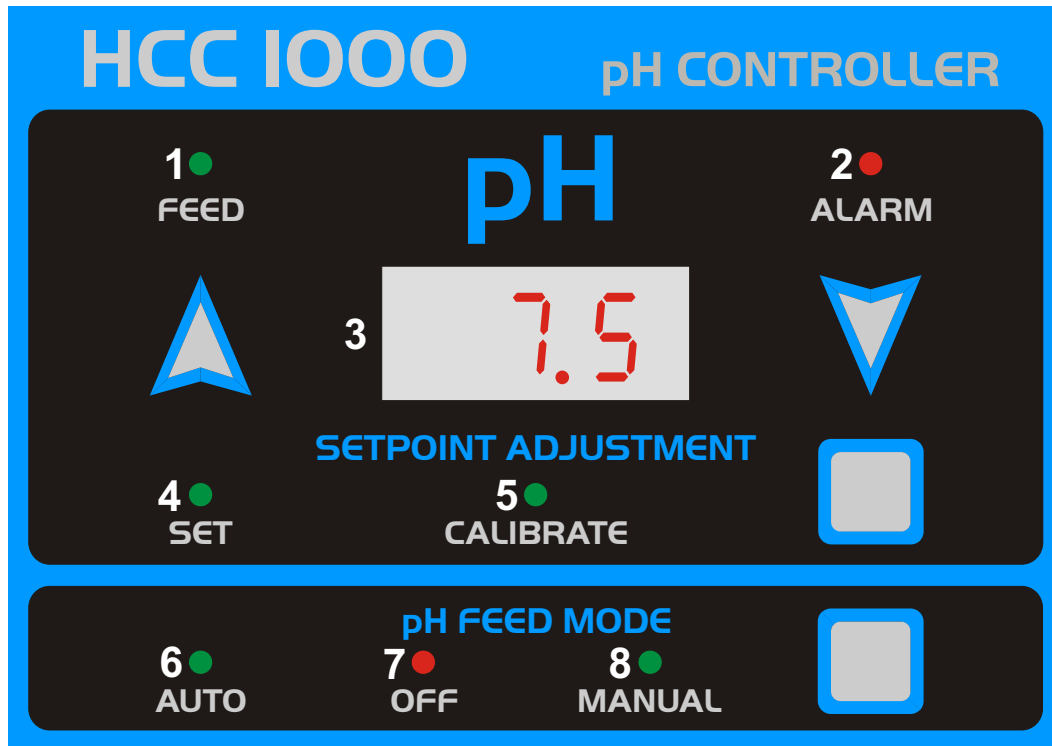
This red LED is illuminated when pH feeding is manually disabled.

pH Manual On Indicator (#8)

This green LED is illuminated when pH feeding is manually activated.

**ILLUSTRATION 4.
HCC 1000 INDICATOR DESIGNATIONS & FUNCTIONS**

DESIGNATION	COLOR / TYPE	DESCRIPTION
1	GREEN LED	pH FEED INDICATOR
2	RED LED	pH OUT OF RANGE ALARM
3	DIGITAL DISPLAY	pH INDICATOR/SETPOINT/CALIBRATION
4	GREEN LED	pH SETPOINT ADJUSTMENT MODE INDICATOR
5	GREEN LED	pH CALIBRATION MODE INDICATOR
6	GREEN LED	AUTOMATIC pH CONTROL INDICATOR
7	RED LED	pH FEED MANUALLY DISABLED
8	GREEN LED	pH FEED MANUALLY ACTIVATED



HCC 1000 CONTROLLER

The HCC 1000 controller unit is virtually maintenance free. Cleaning of the enclosure, front panel and flow cell can be performed using a clean, soft cloth moistened with mild soap and water solution or glass cleaner. Use of abrasives or harsh chemicals may damage the enclosure and membrane switch panel.

WATER MAINTENANCE

Always test and record water chemistry readings in compliance with Health Department requirements using a quality manual test kit. Calibrate pH periodically as described earlier in this manual.

PRECISION CALIBRATION

The HCC 1000 controller provides instrument-grade accuracy which exceeds that of most liquid-standard water testing kits. Therefore, it may be preferable to calibrate pH using commercially available reference solutions.

SENSOR MAINTENANCE

The sensor must be clean and free from oil, chemical deposits and contamination to function properly. After saturation in pool or spa water, the sensor may need to be cleaned on a weekly or monthly basis depending on bather load and other facility-specific characteristics. Slow response, increased need to calibrate pH, and inconsistent readings are indications that the sensor is in need of cleaning.

To clean the sensor, disconnect from the controller and carefully remove them from the flow cell. Clean the reference junction (the white teflon ring at the bottom of sensor body) with a soft tooth brush and regular tooth paste. A household liquid dishwashing detergent may also be used to remove any oil. Rinse with fresh water, replace teflon thread-seal tape, and reinstall sensor. Hand tighten only.

Never allow a pH sensor to dry completely. Drying will damage the reference junction and void the sensor warranty.

SENSOR REPLACEMENT

HCC Professional Series pH sensors are engineered to provide the highest performance and longest possible functional service life. If a properly cleaned sensor provides unstable readings or requires excessive calibration, the sensor should be replaced. For optimum controller performance, replace with genuine HCC Professional Series sensor PRO15-2.

SENSOR STORAGE

Exposure to atmospheric conditions will cause the sensor tips to dry out. Always remove and properly store pH sensor in the soaking cap provided if sensor is to be removed or stored for one hour or longer. Although Hayward® Professional Series sensors are freeze-resistant, they must be protected from freezing temperatures when not in use.

Store sensor in the soaking cap provided, making sure that the container is filled with the original storage solution or clean water. If the storage container has been misplaced, store sensors individually in small glass or plastic containers with clean water covering sensor tips.

CONTROLLER STORAGE

The controller unit is subject to damage by electro-static discharge (ESD) when the sensor cables are disconnected. Always reinstall the BNC protective covers prior to storing or transporting the HCC 1000 controller unit.

WINTERIZATION

The pH sensor should be prepared for storage as outlined above and protected from freezing temperatures. Although the HCC 1000 controller is designed to withstand a broad temperature range, winter storage in a secure location is desirable.

The flow cell and poly tubing must be drained prior to exposure to freezing temperatures. Either purge all water using compressed air or thoroughly drain through the valve ports and tubing connections.

Each HCC 1000 controller is manufactured to the highest quality standards and then thoroughly tested before leaving the factory. State of the art design and fabrication technology ensure years of trouble free operation. Most apparent malfunctions can be solved through the following corrective actions:

No lights are illuminated when controller is powered on.

1. Check circuit breaker and/or receptacle for proper operation. Connect to functional grounding-type GFCI protected power source.
2. Check for damaged power cord or connector.

Alarm light(s) and tone are observed.

1. Ensure that filtration system is functioning properly, flow is adequate, and water chemistry is in balance.
2. Ensure that sensor and power cables are properly connected to their respective connectors on the controller unit.
3. Check chemical feeders for proper operation.
4. Ensure that flow sensor is properly installed and connected.

pH chemical feeder is not activated as expected.

1. Ensure that acid/base feed mode is properly set for your chemical feeding requirements.
2. Make sure "auto" pH feed mode is selected.
3. Check pH Setpoint.

pH requires frequent calibration.

1. Clean the pH sensor as outlined in the maintenance section. If sensor continues to provide unstable readings after cleaning, replace sensor.

pH readings are inconsistent or slow in response.

1. Ensure that sensor cables are properly connected to their respective BNC connectors on the controller unit.
2. Clean the sensors as outlined in the maintenance section. If sensors continue to provide unstable readings after cleaning, replace sensors.
3. Check to ensure that all electrical equipment in the facility pump room is properly bonded.

pH chemical feeder runs continuously.

1. Make sure "auto" feed mode is selected.
2. Ensure that chemical feeders are properly connected to their respective connectors on the controller unit.

pH feeding overshoots the setpoint.

1. Ensure that each chemical feeder is properly sized.
2. Check concentration of sanitizer or pH chemical.

pH feeding does not reach the setpoint.

1. Ensure that each chemical feeder is properly sized.
2. Check concentration of sanitizer or pH chemical.
3. Check chemical feeders and injection points for proper operation.

SECTION 12.

TECHNICAL SPECIFICATIONS

Display Range:	pH	0.0 - 9.9
Setpoint Range:	pH	7.0 - 8.0
Default Settings:	pH	7.5
Calibration Range:	pH	2.0 pH +/-
Control Accuracy:	pH	0.1 pH
Mode Selections:	pH Feed pH Selection pH Mode	Auto/Off/Manual Acid/Base Auto/Set/Calibrate
Safety Systems:	pH Controller Unit Required Optional	Audible & Visual Alarms Diagnostic Self Test Flow Sensor Remote Alarm
pH & Sensor:	Casing Material Junction Type Wet End Connector	Molded ABS Teflon Reference ½" NPT Shielded BNC
Sensor Output Signal Requirements	0-14 pH	
Power Input:	120/240 Volt AC, 10 AMP	50/60 Hz
Outputs:	pH Feed Remote Alarm	4 Amp / 120 VAC 4 Amp/ 240 VAC 1 Amp / Dry Contact 1 Amp / Dry Contact 1 Amp / Dry Contact
Optional Equipment	RS232 Computer Interface Cable Thermal Printer Three-Year Professional Series Sensor	

LIMITED WARRANTY

Hayward® warrants the HCC 1000 automated controller to be free of defects in material and workmanship for a period of one year from date of shipment from our factory or authorized distributor. Liability under this warranty is limited to the repair or replacement of any device or component which is returned to the factory within one year of delivery to original purchaser, shipping prepaid, and which is found to be defective upon examination.

Hayward® warrants all flow sensors, pH and ORP Sensors, fittings and accessories to be free of defects in material and workmanship for a period of one year from date of shipment from our factory or authorized distributor. Liability under this warranty is limited to the repair or replacement of any device or component which is returned to the factory within the warranty period, shipping prepaid, and which is found to be defective upon examination.

Hayward® disclaims all liability for damage during transportation, for consequential damage of whatever nature, for damage due to handling, improper installation or operation, and for determining suitability for the use intended by the purchaser. Hayward® makes no warranties, either expressed or implied, other than those stated above. No representative has authority to change or modify this warranty in any respect. After obtaining a Return Merchandise Authorization form, any warranty claims should be directed to the following address:

Hayward Commercial Pool Products
10101 Molecular Drive Suite 200
Rockville, MD 20850 (USA)
800-657-2287
301-838-4001

CODE REQUIREMENTS

1. ALL CONSTRUCTION RELATED TO THE POOL AND SURROUNDING POOL AREA SHALL BE IN FULL ACCORDANCE WITH THE LAC TITLE 51 XXV CODE, AND ALL OTHER APPLICABLE CODES, AND STANDARDS.
2. THIS POOL IS A NEW OUTDOOR POOL INSIDE A SECURE AREA. THE EQUIPMENT IS ALSO INSIDE A SECURE AREA.

NOTE: GOING FORWARD WITHIN THIS DOCUMENT, ALL SUBSECTIONS REFERENCED FROM THE LAC TITLE XXV CODE SHALL EXCLUDE "LAC TITLE 51 XXV CODE" AND LIST ONLY THE SPECIFIC SUBSECTION BEING REFERENCED. IT IS UNDERSTOOD THAT ALL SUBSECTIONS BEING REFERENCED WITHIN THIS DOCUMENT ARE UNDER LAC TITLE 51 XXV CODE.

DESIGN REQUIREMENTS

1. PER 301B - ALL INTERIOR SURFACES OF THE POOL SHALL RECEIVE A LIGHT COLORED PLASTER ON ALL SURFACES NOT TILED. PLASTER SHALL BE IVORY QUARTZ.
2. PER 305A - ALL POOL WALLS SHALL BE VERTICAL AND PLUMB.
3. PER 311A - THE MINIMUM WATER DEPTH ON THIS POOL DESIGN IS 4'-0".
4. PER 311C - THIS POOL IS DESIGNED NOT TO EXCEED 5'-0" WATER DEPTH, THEREFORE NOT REQUIRING A BEGINNERS AREA THAT IS SEPARATED FROM THE DEEP END.
5. PER 311E - DUE TO THE ESTABLISHED WATER DEPTHS, THERE WILL BE NO DIVING ALLOWED IN THIS POOL. ALL WATER DEPTH TILE MARKER LOCATIONS SHALL ALSO INCLUDE A 6"X6" INTERNATIONAL NO DIVING SYMBOL.
6. PER 315A - THE POOL TURNOVER RATE SHALL BE SIZED AT 7 HOURS.
7. PER 317D - THIS POOL WILL HAVE AN UNDERWATER SEAT BENCH THAT IS IN FULL COMPLIANCE WITH THE DOCUMENT ENTITLED "VARIANCE CRITERIA FOR UNDERWATER SEAT BENCHES" (SEE UNDERWATER SEAT BENCH REQUIREMENTS).
8. PER 323B - THE POOL DECK, COPING AND STEP SURFACES SHALL BE CONSTRUCTED WITH SLIP RESISTANT AND EASILY CLEANABLE MATERIAL. THE COPING SHALL BE CONSTRUCTED WITH SAFETY GRIP.
9. PER 323F.3 - THE MINIMUM CONTINUOUS UNOBSTRUCTED DECK WIDTH SHALL BE 4 FEET.
10. PER 323G - THE POOL DECK SHALL BE SLOPED 1/4" PER 1 FOOT. (SEE PLAN SHEET PL-1.1 FOR SLOPE DIRECTION).
11. PER 323J - CONTROL JOINTS AROUND THE COPING AND THROUGHOUT THE DECK SHALL BE CONSTRUCTED TO A MINIMUM WIDTH OF 1/8", AND SHALL BE WATER TIGHT IN FULL COMPLIANCE WITH THE LAC 51 CODE.
12. PER 323O - POOL DECK SHALL BE SLOPED AS INDICATED ON SHEET PL-1.1.
13. PER 323P - SITE DRAINAGE SHALL BE INSTALLED TO EFFECTIVELY SHED WATER FROM POOL DECK AND POOL, AND PREVENT FLOODING OR EROSION OF LANDSCAPING ONTO POOL DECK OR POOL.
14. PER 323Q - ALL POOL CIRCULATION SYSTEM PIPING SHALL BE TESTED WITH AN INDUCED STATIC HYDRAULIC PRESSURE TEST AT 25 PSI FOR 30 MINUTES, AND SHALL BE PERFORMED BEFORE ANY OF THE PIPING IS COVERED UP. PIPING WILL BE PRESSURED DURING THE ENTIRE DURATION OF THE CONSTRUCTION PROCESS AS MUCH AS FEASIBLY POSSIBLE.
15. PER 323S - TWO HOSE BIBBS WITH VACUUM BREAKERS SHALL BE PROVIDED FOR WASHING DOWN THE ENTIRE POOL DECK AREA.
16. PER 325 - THREE MEANS OF EXIT/EGRESS IS PROVIDED ON THIS POOL BY MEANS OF STAIRS AND LADDERS EACH WITH HANDRAIL(S).
17. PER 327 - ALL STAIR TREADS ARE 13", ALL RISERS ARE UNIFORMLY 10-13/16", WITH THE BOTTOM RISER VARYING NO MORE THAN PLUS OR MINUS 2", ONE HANDRAIL SHALL BE PROVIDED, AND SHALL BE NO MORE THAN 18 INCHES HORIZONTAL DISTANCE FROM THE FACE OF BOTTOM RISER. THE OUTSIDE DIAMETER OF THE HANDRAIL IS 1.40" O.D..
18. PER 329 - THE POOL LADDERS SHALL:
 - A. BE MADE ENTIRELY OF CORROSION-RESISTING MATERIALS
 - B. HAVE TWO HANDHOLDS OR TWO HANDRAILS.
 - C. HAVE A CLEARANCE OF NOT MORE THAN 6 INCHES NOR LESS THAN 3 INCHES BETWEEN ANY LADDER TREAD EDGE AND THE POOL WALL BELOW THE WATER LEVEL.
 - D. HAVE A MINIMUM OF 17 INCHES AND MAXIMUM OF 24 INCHES CLEAR DISTANCE BETWEEN LADDER HANDRAILS
 - E. HAVE A UNIFORM HEIGHT BETWEEN LADDER TREADS, WITH A 7-INCH MINIMUM DISTANCE AND A 12-INCH MAXIMUM DISTANCE.
 - F. HAVE A MINIMUM HORIZONTAL DEPTH OF 1-1/2 INCHES FOR THE LADDER TREADS.

CIRCULATION SYSTEMS

1. PER 501 - ALL POOL EQUIPMENT IS SIZED FOR A 7 HOUR TURNOVER, AND ALL POOL EQUIPMENT SHALL MEET NSF 50 PER.
2. PER 503A - WATER VELOCITY FOR DISCHARGING PIPE SHALL NOT EXCEED 10FPS, AND THE VELOCITY FOR THE SUCTION PIPING SHALL NOT EXCEED 6 FPS.
3. PER 503C.1 - THIS POOL SHALL BE PROVIDED WITH A FLOW METER SHOWING FLOW RATE THROUGH THE FILTER SYSTEM IN GALLONS PER MINUTE.
4. PER 505 - PROPERLY SIZED FILTER(S) SHALL BE PROVIDED WITH A SIGHT GLASS TO DETERMINE WATER CLARITY.
5. PER 507 - A RECIRCULATION PUMP SHALL BE PROVIDED THAT MEETS OR EXCEEDS THE DESIGNED FLOW RATE FOR THE POOL RECIRCULATION SYSTEM.
6. PER 504 - TWO (2) RETURN INLETS SHALL BE PROVIDED FOR EACH 600 S.F. OF POOL WATER SURFACE AREA. THIS POOL HAS BEEN DESIGNED WITH 6 RETURN INLETS IN THE MAIN POOL AREA AND TWO (2) RETURN INLETS IN THE TANNING SHELF FOR A TOTAL OF 8 RETURN INLETS (DIRECTIONAL EYEBALL INLETS) AS SHOWN PER PLAN PL-1.1. FOUR (4) MAIN DRAINS ARE TO BE LOCATED AS SHOWN ON PLANS.
7. PER 511 - ALL WALL RETURN INLETS SHALL BE ADJUSTABLE. THE WALL RETURN INLETS ARE ALL LOCATED BETWEEN 10 INCHES AND 15 INCHES BELOW THE POOL OVERFLOW LEVEL.
8. PER 513 - ALL SUCTION OUTLETS SHALL HAVE COVERS THAT MEET OR EXCEED THE VIRGINIA GRAM BAKER ACT (ANSI-APSP 16.2011) REQUIREMENTS. MAIN DRAINS SHALL BE SPACED AT 6'-0" FROM CENTER TO CENTER.
9. PER 515 - ONE (1) SURFACE SKIMMER SHALL BE PROVIDED FOR EVERY 500 SQ. FT. OF WATER SURFACE AREA. THIS POOL HAS BEEN DESIGNED WITH FOUR (4) SKIMMERS IN THE MAIN POOL AREA, ONE (1) SKIMMER IN THE TANNING SHELF AND ONE (1) SKIMMER IN THE BENCH.

GENERAL STANDARDS

1. PER 101 - ALL DEPTH MARKER REQUIREMENTS FOR THIS SECTION OF CODE ARE IDENTIFIED ON PLAN SHEET PL-1.2, DETAIL 03, AND REFERENCED ON PLAN PL-1.1.
2. PER 103 - THIS CLASS C POOL SHALL UTILIZE A 12FT. LONG STRONG POLE WITH SHEPARD'S HOOK (LIFESAVING HOOK), A 60 FT. THROWING ROPE AND RING BUOY, AND A TELEPHONE SHALL BE POSTED WITH EMERGENCY NAMES AND NUMBERS.
3. PER 101A - ALL FRESH WATER SUPPLY LINES, AND BACKWASH LINES SHALL BE SEPARATED BY A 6" MINIMUM AIR GAP, PREVENTING A PHYSICAL CONNECTION OF THE FRESH WATER SUPPLY LINE, OR THE BACKWASH LINE TO THE POOL WATER BODY.

4. PER 111 - BACKWASH WATER SHALL BE DISCHARGED INTO A SANITARY SEWER LINE THROUGH A 6" MINIMUM AIR GAP.
5. PER 113A - POOL CONTRACTOR AND ELECTRICAL SUB SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST NATIONAL ELECTRICAL CODE OF THE NATIONAL FIRE PROTECTION AGENCY.
6. PER 115A - THIS POOL WILL BE OPEN FOR USE DURING NON-DAYLIGHT HOURS, AND THEREFORE REQUIRES THAT AREA POOL LIGHTING, BOTH UNDERWATER AND ABOVE DECK LIGHTING COMBINED SHALL BE PROVIDED AT NOT LESS THAN 2 WATTS PER SQ FOOT OF DECK AREA. (NOTE: VALUES OF EFFICIENCY FOR INCANDESCENT LAMPS ARE ASSUMED TO BE 20 LAMP LUMENS PER WATT.
7. PER 117 - THE POOL EQUIPMENT SHALL BE INSTALLED OUTDOORS, NOT REQUIRING VENTILATION.
8. PER 131 - THIS POOL WILL NOT HAVE LIFEGUARDS, THEREFORE WARNING SIGNS SHALL BE POSTED THAT NO LIFEGUARD IS ON DUTY. ADDITIONAL SIGNS WITH RULES AND REGULATIONS SHALL BE POSTED IN A CONSPICUOUS PLACE TO INFORM POOL PATRONS.
9. PER 133A - EMERGENCY EQUIPMENT SHALL BE PROVIDED IN NOTE 2 OF THIS SECTION.

DISINFECTION AND BACTERIOLOGICAL QUALITY

1. PER 901A - ALL DISINFECTANT EQUIPMENT SHALL COMPLY WITH NSF STANDARD 50.
2. PER 901A.2 - THIS POOL SHALL BE CONTINUOUSLY DISINFECTED BY A COMMERCIAL GRADE CHLORINE TABLET THAT IMPARTS AN EASILY MEASURED RESIDUAL. THE CHLORINATOR PROVIDING DISINFECTANT TO THE POOL WATER IS TO BE ADJUSTED PER FIELD TESTING MEASURES THAT ARE SIMPLE AND ACCURATE.
3. PER 901C - THE POOL SHALL BE SUPPLIED WITH A CHEMICAL TEST KIT WHICH TESTS FOR ALL LEVELS MENTIONED IN NOTE BELOW VIA THE DPD METHOD OF DETECTING CHLORINE RESIDUAL. (TAYLOR TEST KIT K-2006 OR BETTER WILL BE PROVIDED).
4. PER 905 - THE PH SHALL BE MAINTAINED IN AN ALKALINE CONDITION BY THE HAYWARD AUTOMATED PH CONTROLLER. (SEE CUT SHEET)
5. THE TESTING RESULTS FOR RESIDUALS SHALL MEET THE FOLLOWING.....
 - TESTING FOR DETERMINATION OF PH, CHLORINE (TOTAL AND FREE), TOTAL ALKALINITY, AND CALCIUM HARDNESS.
 - DISINFECTANT LEVELS AND PH SHALL BE MEASURED TWICE PER DAY, AND HOURLY WHEN POOL IS IN HEAVY USE.
 - TOTAL ALKALINITY TO BE MEASURED WEEKLY
 - CALCIUM HARDNESS TO BE MEASURED MONTHLY.

LEVEL TARGETED REQUIREMENTS ARE...

RESIDUAL CHLORINE	1.0 ppm MINIMUM
PH	7.5 - 7.8
TOTAL ALKALINITY	60 - 180 ppm (MG/L)
CALCIUM HARDNESS	1000 ppm (MG/L) MAXIMUM

UNDERWATER SEAT BENCH

1. UNDERWATER SEAT BENCH ON THIS POOL IS WITHIN LESS THAN 5'-0" WATER DEPTH.
2. THERE ARE NO SWIM LANES WITHIN THIS POOL.
3. THE WATER DEPTH ABOVE THE UNDERWATER SEAT BENCH IS 13 INCHES.
4. THE SEAT OF THE UNDERWATER BENCH FROM FACE OF POOL WALL TO THE VERTICAL FACE OF THE BENCH IS 18 INCHES.
5. A PERMANENT COLORED BAND OF DARK, CONTRASTING AND SLIP-RESISTANT TILE SHALL BE INSTALLED AT THE FRONT EDGE OF THE SEAT EXTENDING TWO INCHES ON THE HORIZONTAL AND VERTICAL SURFACE, AND SHALL BE SLIP RESISTANT (SEE SHEET PL-1.2, DETAIL 04).
6. THE FRONT EDGE OF THE UNDERWATER SEAT BENCH SHALL HAVE A 1 INCH ROUNDED EDGE.
7. THE UNDERWATER SEAT BENCH IS NOT DESIGNED AS ONE OF THE REQUIRED ENTRY/EXIT ACCESS POINTS.

TANNING SHELF

1. THE TANNING SHELF IS LOCATED IN OUTSIDE OF THE NORMAL INTERNAL POOL STRUCTURE WITH A LEVEL FLOOR. THE TANNING SHELF IS INTENDED FOR BATHERS TO SIT OR LIE DOWN IN A MINIMUM 6" TO MAXIMUM 10" DEPTH OF POOL WATER FOR SUNNING OR TANNING PURPOSES. THE DESIGN DEPTH IS 6 INCHES.
2. THE TANNING SHELF SHALL NOT EXTEND BEYOND THE VERTICAL PLANE OF ANY PORTION OF THE POOL WALL. THE DESIGN SHOWS THAT THE TANNING SHELF IS BEFORE THE POOL STAIRS.
3. THE TANNING SHELVES SHALL BE RECESSED A MINIMUM OF 36" BACK FROM THE NORMAL LOCATION OF THE INTERNAL WALL AT THE SHALLOW END OF A POOL, AND SHALL BE A MINIMUM OF FIVE FEET WIDE. IN NO CASE SHALL ANY SUNNING OR TANNING SHELF BE LESS THAN 15 SQUARE FEET IN TOTAL HORIZONTAL SURFACE AREA. THE TANNING SHELF DESIGN IS RECESSED 5'-5" FROM THE NORMAL LOCATION OF THE INTERNAL POOL WALL. THE TANNING SHELF DIMENSIONS ARE T-T" WIDE X 25'-0" LONG.
4. A DECK SURFACE CONSTRUCTED IN COMPLIANCE WITH PART XXIV OF THE LOUISIANA STATE SANITARY CODE (LAC 51:XXIV) SHALL COMPLETELY SURROUND THE SUNNING OR TANNING SHELF EXCEPT FOR THE SUNNING OR TANNING SHELF EDGE WHERE IT MEETS THE MINIMUM 3 FEET DEEP SHALLOW END OF THE POOL. THE DISTANCE FROM THE SURFACE OF THE DECK TO ANY POINT ON THE SURFACE OF THE SUNNING OR TANNING SHELF SHALL BE A MAXIMUM OF TWELVE INCHES (12"). THE DECK COPING ON THREE SIDES OF THE TANNING SHELF HAS BEEN DESIGNED TO BE NO MORE THAN TWELVE INCHES.
5. A PERMANENT COLORED BAND OF DARK, CONTRASTING AND SLIP-RESISTANT TILE SHALL BE INSTALLED AT THE INTERSECTION OR EDGE OF THE POOL WALL (WHERE IT MEETS THE MINIMUM 3 FEET DEEP SHALLOW END OF THE POOL) AND THE SUNNING OR TANNING SHELF. SUCH CONTRASTING TILE MUST EXTEND AT LEAST 2' ON BOTH THE HORIZONTAL AND VERTICAL SURFACES FROM THE INTERSECTION OR EDGE OF WHERE THEY MEET. THE TANNING SHELF HAS BEEN DESIGNED WITH A 2" WIDE CONTRASTING TILE BETWEEN THE TANNING SHELF AND THE FIRST STEP GOING INTO THE POOL.
6. A MINIMUM OF ONE SUBMERGED INLET SHALL BE PROVIDED IN ALL SUNNING OR TANNING SHELVES. THIS ONE SUBMERGED INLET SHALL BE ADEQUATE FOR SUNNING AND TANNING SHELVES CONSISTING OF 100 SQUARE FEET OR LESS. FOR SUNNING OR TANNING SHELVES GREATER THAN 100 SQUARE FEET, ADDITIONAL SUBMERGED INLETS SHALL BE PROVIDED AT A RATE OF ONE PER 100 SQUARE FEET, OR ANY FRACTION THEREOF, OF THE SUNNING OR TANNING SHELF SURFACE AREA. THE INLET(S) SHALL BE CENTRALLY LOCATED AND INSTALLED INTO THE POOL'S CIRCULATION SYSTEM. THE TANNING SHELF HAS BEEN DESIGNED WITH TWO (2) RETURN INLETS.
7. A MINIMUM OF ONE SKIMMER PER 200 SQUARE FEET OR ANY FRACTION THEREOF, OF THE SUNNING OR TANNING SHELF SURFACE AREA, SHALL BE PROPERLY LOCATED, INSTALLED AND CONNECTED WITH THE POOL'S CIRCULATION SYSTEM. THE TANNING SHELF HAS BEEN DESIGNED WITH ONE (1) SKIMMER IN THE TANNING SHELF.
8. THE SURFACE OF ALL SUNNING OR TANNING SHELVES SHALL BE FULLY SELF-DRAINING WITH A MAXIMUM SLOPE OF ONE FOOT VERTICAL PER TWELVE FEET HORIZONTAL, AND SHALL COMPLY WITH ALL OTHER POOL SURFACE REQUIREMENTS OF LAC TITLE 51 PART XXV (SWIMMING POOLS). THE TANNING SHELF HAS BEEN DESIGNED WITH 1:50 SLOPE.

9. ALL SUNNING OR TANNING SHELVES SHALL BE INSTALLED AT THE MOST SHALLOW PORTION OF THE POOL BUT SHALL, IN NO CASE CONNECT WITH OR BE ADJACENT TO WATER DEPTHS GREATER THAN 4 FEET. THE TANNING SHELF HAS BEEN DESIGNED BEYOND THE STEPS LEADING TO THE POOL.
10. DEPTH MARKERS SHALL BE PROVIDED AS REQUIRED IN LAC 51:XXIV.101. DEPTH MARKERS HAVE BEEN PROVIDED.
11. IF THE SUNNING OR TANNING SHELF IS CONSTRUCTED AS PART OF INGRESS, SUCH AS STEPS INTO THE POOL, THEN A HANDRAIL MUST BE INSTALLED IN COMPLIANCE WITH SUCH REQUIREMENTS AS REQUIRED IN THE LAC TITLE 51 PART XXIV (SWIMMING POOLS). THE TANNING SHELF HAS BEEN DESIGNED WITH HANDRAILS AT EACH END OF THE STEP(S).
12. INTERACTIVE PLAY DEVICES SHALL NOT BE INSTALLED IN ANY SUNNING OR TANNING AREA. NO INTERACTIVE PLAY DEVICES SHALL BE INSTALLED IN THE TANNING AREA.

GENERAL CONSTRUCTION NOTES

1. REFERENCE POOL & DECK PLAN FOR DRAINAGE.
2. ALL POOL DECK DEPTH MARKERS (BOTH DECK MOUNTED AND WALL MOUNTED) ARE IDENTIFIED IN THE POOL PLAN VIEWS AND SECTIONS, AND SPECIFICALLY ON SHEET PL-1.2, DETAIL 03.
3. ALL 2"X2" DARK CONTRASTING EDGE TILE WITHIN THE POOL IS IDENTIFIED THROUGHOUT ALL POOL PLAN VIEWS AND SECTION VIEWS. COLORS ARE IDENTIFIED IN THE HARDSCAPE PLANS.
4. DIMENSIONAL LAYOUT PLAN FOR POOL ON SHEET PL-1.0 IDENTIFIES THE LOCATIONS OF ALL SKIMMERS, INLETS, DRAINS, DEPTH CHANGES, DEPTH MARKERS, HAND RAIL, LADDER, AND ADA LIFT MOUNTING LOCATION.
5. ALL SKIMMERS ARE TO HAVE EQUALIZER LINES WITH SUCTION COVERS.



POOL DESIGN DATA

WATER VOLUME =	66,455 GALLONS
TURNOVER RATE =	7.0 HOURS
TOTAL FLOW RATE =	158 GPM
WATER SURFACE AREA =	2,237 SQ. FT.
POOL PERIMETER =	230 LN. FT.
FLOW RATE PER SYSTEM =	79 GPM
TOTAL HEAD LOSS PER SYSTEMS =	40.6 FT.
MAXIMUM BATHER LOAD =	111 PERSONS

POOL DECKING = 5,783.9 SQ. FT.

SHEET INDEX

SHEET #	SHEET TITLE
G-1.1	SPECIFICATIONS, NOTES AND POOL DESIGN DATA
PL-1.1	POOL & DECK PLAN
PL-1.2	POOL CROSS SECTIONS
PL-2.1	DETAILS
PL-3.1	POOL PIPING PLAN
PL-3.2	ONE-LINE DIAGRAM

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REVISIONS	#	DESCRIPTION	DATE
	1	Revised Code Requirements	3/16/2018



NEW POOL
TERRABELLA POOL

PROJECT ADDRESS:
JOB No: 2394 DATE: 1/24/2018
DRAWN BY: CACD CHECKED BY: CACD

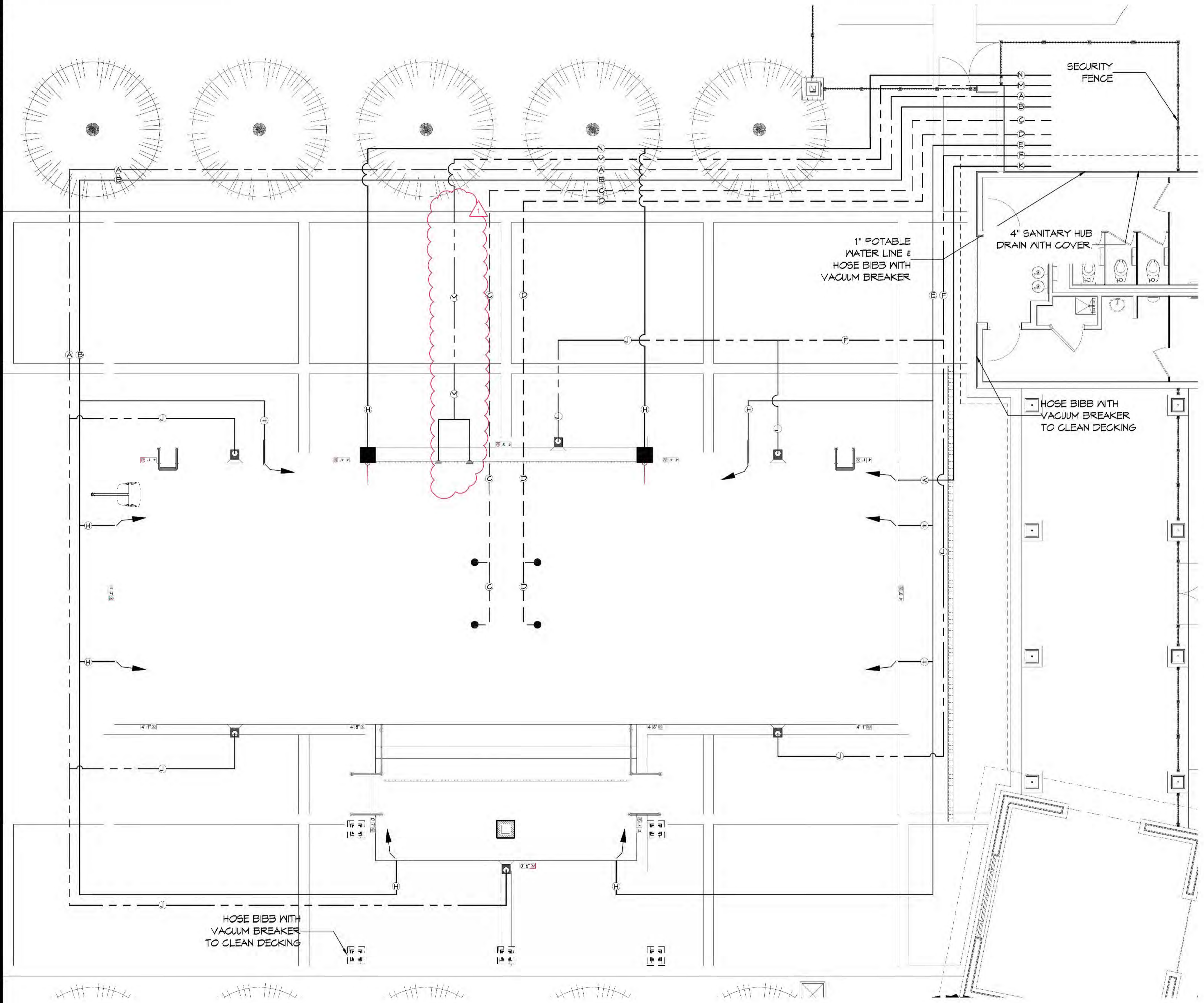
SHEET TITLE:
SPECIFICATIONS, NOTES AND POOL DESIGN DATA

DRAWING NUMBER:

G-1.1

SHEET No: 1 of 6

FILE NAME: C:\Users\adam\OneDrive\Documents\2018\18-0000\18-0000-0000\18-0000-0000-0000.dwg
 PLOT DATE: 3/16/2018 11:25:30 AM
 PLOT SCALE: 3/16" = 1'-0"
 PLOT BY: adam



PIPE SCHEDULE

PIPE ID	DESCRIPTION	SIZE	TYPE	FLOW RATE	VELOCITY
A & F	MAIN SKIMMER SUCTION	2.5 INCH	SCH 40 PVC	60 GPM	5.2 FPS
B & E	MAIN RETURN LINE	2.0 INCH	SCH 40 PVC	79 GPM	8.1 FPS
C & D	MAIN DRAIN	2.0 INCH	SCH 40 PVC	19 GPM	1.9 FPS
H	INDIVIDUAL RETURN LINE	1.5 INCH	SCH 40 PVC	20 GPM	3.6 FPS
J	INDIVIDUAL SKIMMER	2.0 INCH	SCH 40 PVC	20 GPM	2.0 FPS
K	FILL LINE	2.0 INCH	SCH 40 PVC	N/A	N/A
G	NOT USED				
M	WATER FEATURE SUCTION	1.25 IN	SCH 40 PVC	25 GPM	5.5 FPS
N	WATER FEATURE RETURN	1.25 IN	SCH 40 PVC	25 GPM	5.5 FPS

NOTE: WATER VELOCITY FOR DISCHARGING PIPE SHALL NOT EXCEED 10FPS, AND THE VELOCITY FOR THE SUCTION PIPING SHALL NOT EXCEED 6 FPS.

SYMBOL IDENTIFICATION LEGEND

- ADA POOL LIFT PER CODE
- SKIMMER (NSF CERTIFIED - VGB 2011 COMPLIANT)
- MAIN DRAIN (NSF CERTIFIED - VGB 2011 COMPLIANT)
- WALL INLET FITTING FOR SENSOR
- ADJUSTABLE EYEBALL WALL INLET
- MAIN DRAIN (VGB AND NSF COMPLIANT)
- 1.90" O.D. S.S. HANDRAIL PER CODE
- 1.90" O.D. S.S. LADDER PER CODE
- DEPTH MARKERS PER CODE
- UNDER WATER POOL LIGHTING

1 POOL PIPING PLAN
 SCALE: 3/16" = 1'-0"

DAMMON

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#	DESCRIPTION	DATE
1	Revised: Water Feature Section	3/16/2018

SEAL:

NEW POOL
TERRABELLA POOL

PROJECT ADDRESS:
 JOB No: 2394 DATE: 1/24/2018
 DRAWN BY: [Signature] CHECKED BY: [Signature]

SHEET TITLE:
POOL PIPING PLAN

DRAWING NUMBER:
PL-3.1

SHEET No: 5 of 6

