

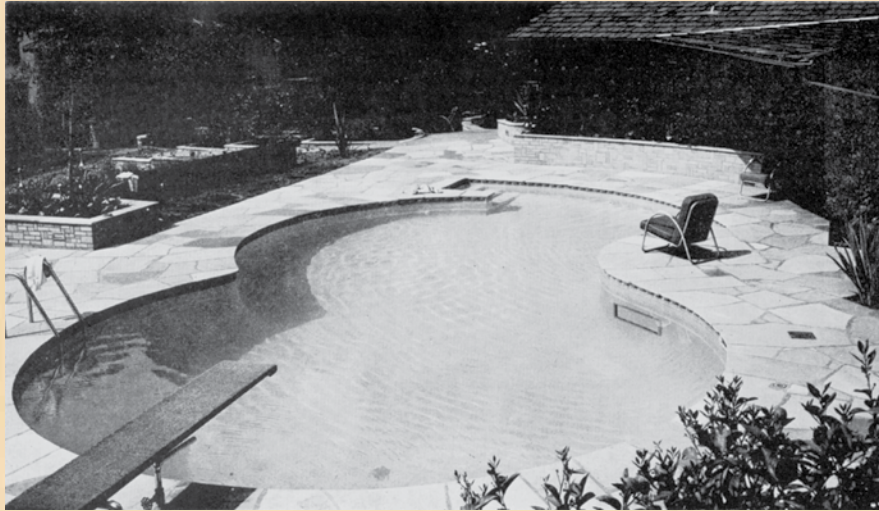


From the library of Chris Zynda

*Chris Zynda is President of ASA and Safety Committee Chair. He is a member of ACI Committees 506, Shotcreting, and C660, Shotcrete Nozzleman Certification; an ASTM International member; and a certified ACI Examiner.*

## Swimming Pool

# Construction in Southern California



*This custom-designed 42 ft pool in Arcadia features a subterranean observation room. One of the viewing windows can be seen in the picture*

Photographs courtesy of Baker Pools, Inc.

## Aquatic Pastime Booms Pool Construction

PRIVATE SWIMMING POOL CONSTRUCTION in Southern California has reached such proportions that it is worthy of analysis that will help explain its growth and trends, and how the industry is handling a branch activity that has attained such stature in a comparatively short length of time. Inasmuch as swimming pools have become a definite part of California living, Southwest Builder and Contractor recently made a compilation of pertinent information on the subject, which is submitted herewith for the benefit of its readers.

The statistical data included covers a period of 17 months—the year 1954 and 1955 through May. So far this year private pool construction, for which permits have been issued, has a valuation of \$4,734,772, or at an annual rate of more than \$11 million. According to companies specializing in pool construction, this figure could be conservatively increased by 10 percent to cover pools that are built by the owners without procuring permits, etc.

An important part of this report is an article written by Dennis L. Gibbs, general manager of Baker Pools and publicity chairman of the Associated Swimming Pool Contractors, organized two and one-half years ago to advance the industry. It describes steps that are being taken to standardize specifications, improve building codes, and clean up sales and advertising practices in the trade. Equipment manufacturers, too, are diligently working on improvements, especially as concerns water purification. It all points toward better standards, materials and methods for swimming pool construction.

Manufacturing and distribution of swimming pool equipment, by the way, has become an important activity in Southern California, where more of it is made than anywhere else in the country. Many companies are specializing in the manufacture of such equipment, which oftentimes will represent

fifteen to twenty percent of the total cost of a pool.

The importance attached to pool building by the State of California was seen in the recent establishment by the Contractors' State License Board of a new specialty classification of swimming pool contractors. Designated Class C-53 and effective June 2, 1955, it requires a special examination for licensees. The new section was published in the May 27, 1955 issue of Southwest Builder and Contractor.

Another section of this report is devoted to minimum requirements for swimming pools in the City of Los Angeles, where 1480 private pools were built last year and 860 the first five months of this year. Requirements of the unincorporated areas of Los Angeles County are also included, as are those of the Los Angeles City Health Department.

Written by Glenn L. Black, of Long Beach, and made a part of the report is a description of Anthony Homes 22-house tract in Downey, which has a swimming pool with every house. The pools are considered incomparable sales features for these homes, which are in the \$25,000 price class.

Concerning new developments in pool construction, mention should be made of the recent approval by the Los Angeles City Board of Building and Safety Commissioners of a petition to install steel swimming pools. The design is for a circular tank pool, 18 ft. in diameter, with a maximum depth of 5 ft., 6 in. Bottom of the tank is a 5-in. reinforced concrete slab; steel walls are 4 ft. high and are embedded in the concrete.

Other materials sometimes used for the "shell" of the pool are plastic, aluminum and fiberglass, but pneumatically-applied concrete (gunite) has become practically standard and is described in detail herein. It is reported to be the least expensive method of providing a sound structure in an irregular shape, a design favored by most buyers.

## Statistics Tell Spectacular Swimming Pool Story

CONSTRUCTION OF private swimming pools in Southern California has recorded a spectacular expansion in 1955 and has attained new all-time monthly high levels in each month since February, despite the fact that the peak season for this type of work will not be reached until July and August.

Statistics for the first five months of 1955 show building permits issued throughout the Southland for construction of 1804 private swimming pools with a total valuation of \$4,734,772. The number of pools represents a jump of 47.4% over the 1224 pools provided in permits issued during the first five months of last year, while the valuation in the five-month period this year is an increase of 38.6% over the total of \$3,417,136 in the corresponding months of 1954.

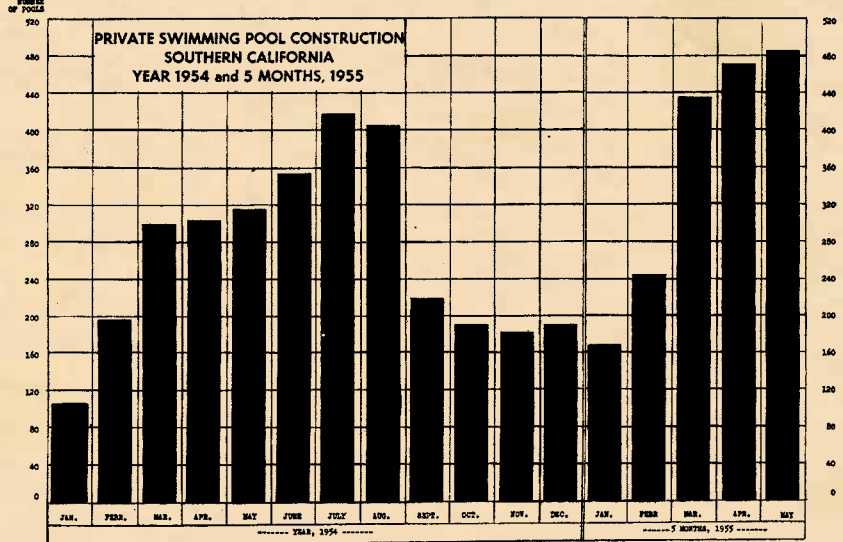
Record-breaking construction figures have been consistent throughout 1955, with the month of January recording an increase of 60.4% in the number of swimming pools as compared with the number provided in January last year, the year-to-year gain in February being 23.2%, in March 45.2%, April 55.1%, and May 52.4%.

With the peak season still ahead, construction of private swimming pools in Southern California for the year 1955 will break all records by a wide margin if current trends are maintained, and to date there has been no indication of slackening in demand.

The previous annual high in private swimming pool construction was last year, when building permits were issued for 3188 pools in the Southland with a total valuation of \$8,511,375. This type of construction has been largely centered

in Los Angeles County, where the year 1954 brought the building of 2868 pools valued at \$7,355,085, the number of pools representing 90% of the Southern California total and the county valuation representing 86.4% of the Southland valuation.

pools with a valuation of \$3,818,276, or 51.6% of all pools in the county and 51.9% of the county's total valuation. In the first five months this year, Los Angeles City showed construction of 860 pools with a valuation of \$2,124,408, or 53.3% of all pools in the county and



In the first five months of this year Los Angeles County accounted for 1614 new pools with a valuation of \$4,086,004, the number of pools being 89½% of the Southern California total and the valuation representing 86.3% of the Southland total.

While Los Angeles County accounts for the great proportion of all Southern California swimming pools, Los Angeles city accounts for more than half of all built in the county. In the year 1954, Los Angeles city showed 1480 new private

52% of the total valuation for pools in the county.

Average building permit valuation per private swimming pool in the year 1954 was \$2670 for all of Southern California, \$2565 for Los Angeles County, and \$2580 for Los Angeles city. In the first five months this year, the average building permit valuation per pool for all of Southern California was \$2625, while in Los Angeles County the average was \$2532 and in Los Angeles city the average was \$2470.

*Recessed surface skimmer, comparatively new device which automatically skims surface of pool, keeping it free of bugs, leaves, and other debris*



## The Swimming Pool Industry Grows Up

By DENNIS L. GIBBS, Vice-President  
BAKER POOLS, INC.  
for ASPC

SWIMMING, as a recreation and a sport, has been popular since the beginning of civilization. No one is so old whose childhood memories do not include the old swimming hole, or a holiday at the seashore. For many years municipal and public plunges also have been centers of recreation, where natural bathing spots were not available. But the golden era in Southern California, the Hollywood of the twenties and thirties, really gave birth to that fabulous baby, the commercial swimming pool industry.

Even then, a private residential swimming pool was something to be read about in movie magazines or social columns, but seldom to be seen or enjoyed

by even the more-prosperous-than-average citizen.

What has happened since that day is a typical story of American ingenuity and industry, and the ever spiraling American standard of living. The Wall Street Journal, in an informative article, reported that there were only 8000 pools of all types in the United States at the end of World War II. Another 10,000 were built, it states, in the next seven years. But in the 18 months closing 1953, another 10,000 were built.

### The boom is on

Estimates are not reliable, but one source states that at the beginning of 1954 there were more than 28,000 pools in the United States, with a breakdown something like this: 15,000 private pools; 5200 in Y.M.C.A.'s, schools, motels and



# Shotcrete Classics



*Excavation being done here with a Hough Payloader; which ramps out of shallow end of pool. Proper setting of forms and excavation are two crucial operations*

hotels; 4700 owned my states, cities, and counties; 2500 Country club pools, and about 900 commercial pools. Most local authorities agree that the 15,000 count on private pools is extremely conservative, and, of course, 1954 saw a doubling of volume for some established builders, with many new companies springing up over the nation.

It is only natural that Southern California, with its combination of ideal climate and tremendous industrial and population growth, should be far ahead of the rest of the country in swimming pool construction, both in techniques, merchandising, and in sheer volume; and with this growth have come the growing pains that have plagued so many of our construction and allied industries. Residential swimming pool construction is a breed all its own; it embraces nearly every trade and skill in the building industry, and at the same time it requires a vigorous, well-coordinated selling program to keep it alive.

With the increasing popularity of swimming pools have come an inevitable influx of ill-fitted and unscrupulous builders, accompanied by their ever-present complement of "suede shoe artists." Too many an innocent home owner in recent years has been left with a partially-completed pool in his back yard and a stack of liens against his property; or, next in line on the growing list of black marks against the pool industry, a piece of construction that was by far more of a headache and a problem than it was a pleasure.

## **The ASPC**

With an eye to the future of the industry and its imminent dangers, a small group of established pool builders sat down to dinner on November 17, 1952, in Hollywood, to discuss these problems. With M. W. Enbody as temporary chairman, they formed a group which was formally organized on March 9, 1953,

with David Brown of Brownie Construction Co., as president; Stanley Curlett of Paddock as vice president, and Dennis L. Gibbs of Baker Pools, Inc., as treasurer. The group named themselves the Associated Swimming Pool Contractors, and dedicated themselves to advance the swimming pool industry in every way possible.

Today, a little over two years later, the association is still striving to gain recognition as the only organized representative group of specialized pool builders in the country, and considerable progress is being made. Membership consists of 14 "regular" members, limited to those who actually make a business of swimming pool construction, and 13 "associate" members, including equipment manufacturers, pool service companies, and sub-contractors. ASPC is pioneering legislation and practice conducive to standardization of speci-

cations, raising of minimum standards, improvement of building codes and a general cleanup of sales and advertising practices, among other things, within the industry.

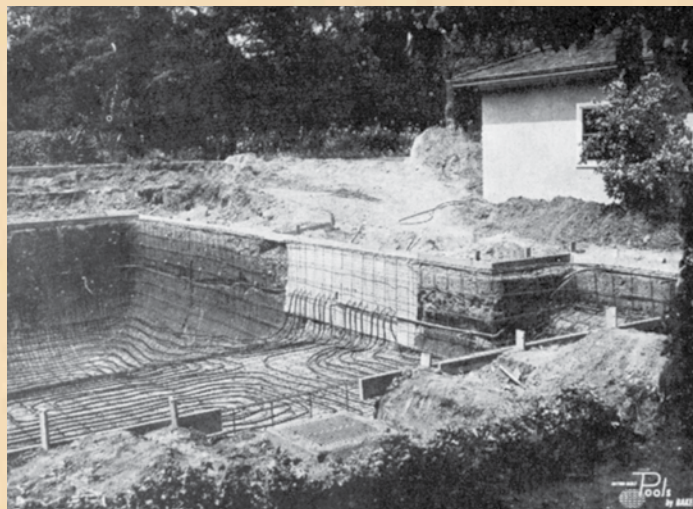
## **ASPC accomplishments**

So far a committee, headed up by Stan Curlett, now associated with Marlin Pool Equipment Co., and M. W. Enbody of Enbody and Sons Co., has succeeded in preparing and having adopted a swimming pool section to be added to the standard code of the Western Plumbing Officials Association. This same code has been adopted en toto by the City of Beverly Hills, and other cities are expected to follow.

Ozzie King, of King Blue-White Pools, chairmanned a committee which has just recently succeeded in persuading the State Contractors License Board to establish a new classification for Swimming Pool Contractors, Class C-53, which became effective June 2, 1955. Construction of appropriate qualifying examinations has already begun. Establishment of this classification should be a long step forward in removing the unqualified builder from the swimming pool industry.

Still another committee, headed by Bart Courtney of Landon Pool Equipment Co., has formulated and adopted a code governing the advertising and selling practices of the industry. Courtney has since become a member of the board of directors of the Better Business Bureau, and the entire association is working with the BBB to enforce the code.

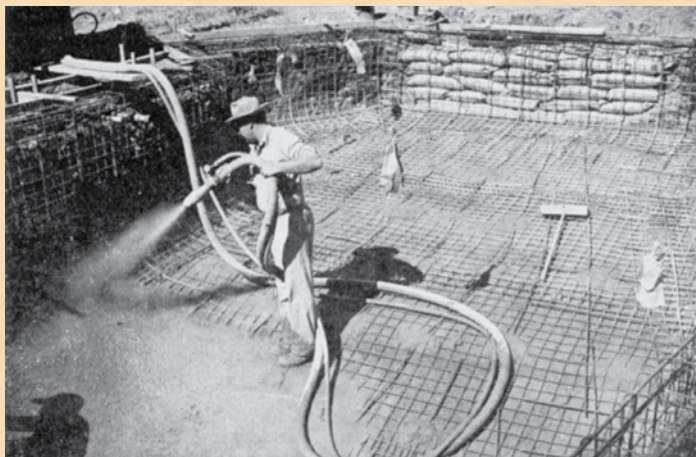
Associate members, as well as regular members, are taking an active interest in forwarding the cause of the association. As an example, W. O. Baker, of Swinequip, Inc., one of the larger equipment manufacturers, is leading a committee, composed exclusively of pool equipment dealers, toward standardiza-



*Radiant heat from tubing buried in the wall is becoming more popular as a means of heating water; also surrounding decks. This photograph of a private installation shows the tubing and reinforcing in place, ready for gunite*



# Shotcrete Classics



*In the gunite process, dry sand and cement are forced under air pressure through hose; water mixture takes place at nozzle. Type of sand used, ratio of sand, and cement to water method of applying can cause quality and strength to vary*

tion of trade practices and improvements of selling ethics.

Above all, the association is anxious to increase its effective membership and strength; and qualified applicants, both regular and associate, are welcome to attend the monthly meetings. There is a great confidence that the Associated Swimming Pool Contractors will grow in strength and size to become a force of great benefit both to the industry and the general public.

#### **Types of pool construction**

In the meantime, equipment manufacturers and pool builders alike are hard at the problem of meeting growing competition with changes and improvements in design and construction of everything from the under-water light, to the filtering system, to the pool structure itself. Types of materials tried with varying degrees of success for the structure, or "shell", include masonry, plastic, steel, aluminum and fiberglass, to name a few.

Of these, gunite, or pneumatically-applied concrete, has become practically standard, for a number of good reasons; for one thing, it is the least expensive of providing a sound structure in an irregular shape, and design is becoming an important factor in residential pools today. Method of application results in a concrete of extreme density without the expense of the forms required for poured concrete. Most pools are "shot" in one day as a monolithic structure and, when completed, present a smooth, unbroken surface with no corners or joints to catch dirt or develop maintenance problems.

#### **Equipment becoming big business**

The increased volume in pool construction has, along with its problems, resulted in some definite advantages to the buying public. For the first time in its history the industry itself has presented a big enough market to warrant the development of bona-fide manufac-

turers and distributors, with a resultant constant improvement in pool equipment, right down the line.

Biggest furor at this writing is over filtering systems, with various adaptations of the diatomaceous earth principle being offered as revolutionary improve-

ments, but most old-time builders are sticking to the time-proven sand pressure system until something that is really better comes along. Without question, the science of water purification is in the throes of producing something truly superior to anything available today, and that new product may not be too far off, now that the market is here to warrant its development.

Everything about pool design and construction is pointing toward improvement: improvement of industry standards; improvement of construction materials and methods, of equipment and accessories. The time is not too far off when a buyer any place in the country will be able to go to a franchised dealer for a nationally known swimming pool, and buy with confidence a standardized, proven product.

And each year millions are recognizing the benefits that can be had from a swimming pool in the home. It offers healthful recreation that keeps the family together in a world that is ever demanding more and more time and energy, and that is allowing less time for true relaxation and exercise. In fulfilling a definite need for modern living the swimming pool industry has an unlimited future.

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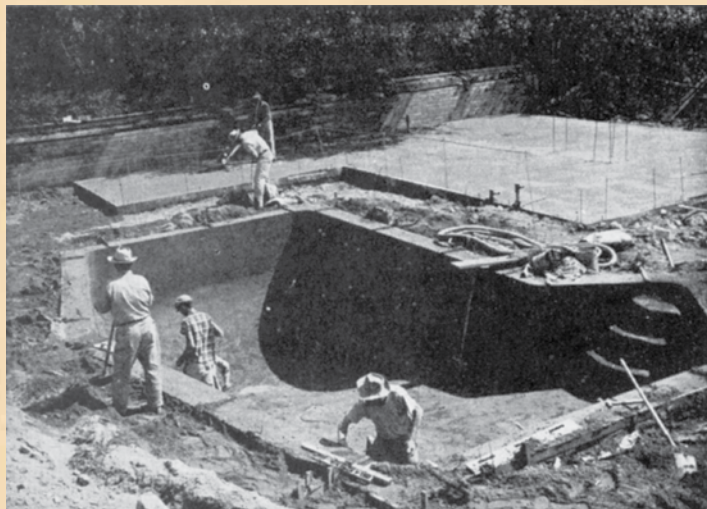
## Gunite in Pool Construction

By **STANLEY G. ZYNDA, Manager**  
**Gunite Contractors Association**

"GUNITE" is the backbone of the swimming pool industry. It is estimated that over 95 percent of the pools constructed in the Southwest are built by this method. It is preferred because no forms are required for the shell itself. A nominal bond beam form only is used; the remainder of the shell is "shot" directly against the earth, which is graded to the

desired contours.

In that "gunite" is readily adaptable to rounded corners and to curves, almost any imaginable shape is possible at little or no extra cost. This fact is of prime importance in that today, swimming pools are being installed in even the smallest back yard. It is quite often necessary to design the shape to avoid buildings, walks, gardens, etc. The result of this flexibility of gunite has been



*Guniting has been completed and workmen are finishing this private pool*



# Shotcrete Classics



*View of Anthony pool-patio from point just outside living room. Overhead fiber glass screening and surrounding fence create attractive outdoor living area*

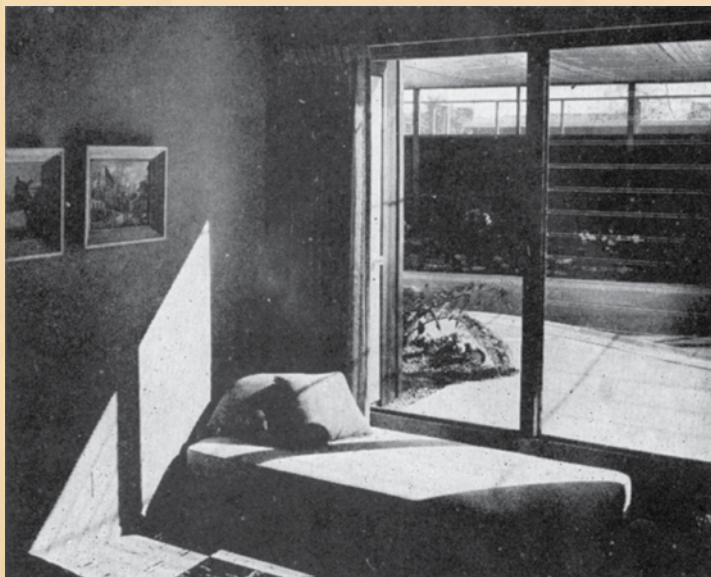
the widest imaginable variation in pool shapes.

#### **Subgrade preparation important**

Of over-all importance to the owner and to the "gunite" contractor is the proper preparation of the subgrade. Inasmuch as the weight of the filled pool rests entirely upon excavated earth it is evident that failure of the subgrade will produce a failure in the pool. In some instances pools have been placed in improperly compacted filled ground with a resulting settlement and cracking. The most common error is a comparatively loose backfilling of an over-excavated site. Such cases usually occur where an attempt is made to improve the "looks" of the subgrade. Where torn spots occur in the excavation, it is far better to fill such areas with "gunite". However, if

this policy is carried to the extreme it is also evident that the contractor will be forced to charge for time and material which was not included in his estimate. Hence, it is repeated that proper excavation is of importance to both the owner and the subcontractor.

After the subgrade is prepared the reinforcement is placed. Here, again, is a step of major importance in that, as in concrete, the action of gunite under stress depends upon the "gunite-reinforcement" combination. All too often the steel mat is not chaired from the bottom. In many cases the "gunite" nozzleman, with a helper, should raise the mat to the proper position by placing "gunite" pads at convenient locations. Wall steel is often improperly spaced out and sometimes even rests against earth. Bond beam rein-



*Master bedroom in Anthony home has view of pool-patio through window walls*

forcement is sometimes spaced too closely. There have been cases of heavy bond beams where it was impossible to "shoot" between the bars without incorporating a large amount of rebound in the work. The entire system of reinforcement should be rigidly fastened in place to prevent sloughing of the "gunite."

#### **Placing of "gunite"**

The next step is the placing of "gunite." This operation is the most important in the entire construction of the pool, yet sometimes even experienced engineers overlook some of the most common faults. First in importance is the mix, which is usually 1:4½. The owner should ascertain from his "gunite" contractor how many sacks of cement he plans on using in the pool. If necessary he can then check with the engineer who designed the pool as to whether the amount is correct. He should then assure himself by actual count of sacks brought on the job, by empty sacks at the end of the job, or by frequent checks during shooting operations that the proper amount of cement is incorporated into the work. The material should be properly mixed. If there is any doubt about this the owner should have his engineer check the work.

#### **Incorporation of rebound**

The most common fault and the most serious is the incorporation of rebound in the work. Rebound is that material which is rejected upon impingement of the nozzle stream. This is often allowed to fall into the bottom, where it is permitted to lay until covered over by a thin layer of "gunite." Rebound, sometimes allowed to accumulate in the bond beam and in other inaccessible places, is fairly easy to identify, even by the uninitiated, by its loose, gravelly composition. Owners and engineers should insist upon removal of this excess material, which is without structural strength.

Another indication that something is amiss is the number of men working on the pool. It has been found by experience that at least seven men are required to do a good job and to insure proper removal of rebound. Thickness of walls is established by ground wires and is easily checked by measuring from these wires to the earth surface. Bottom thickness can be checked by actual measurement of the "gunite" during placing. The best insurance in the long run is to deal with a reputable contractor experienced in the construction of pools. The Gunite Contractors Association is a non-profit organization whose purpose is to assist engineers, contractors, and owners. In any cases of doubt as to the proper placement of "gunite" it is suggested that this agency be called upon to inspect the work.

A comparatively recent development in pools is the recessed surface skimmer. It automatically skims the surface of the pool, keeping it free of debris.



# Shotcrete Classics

## Minimum Requirements for Swimming Pools in the City of Los Angeles

TWO SETS OF PLANS are required with the permit application, which must include a plot plan showing all buildings on the site and location of the dry well.

A distance of at least 5 ft. must be maintained between a pool and the property line; also between a pool and structures. Dry wells must be at least 8 ft. from a property line, structures and the pool.

Where dry wells are not shown on the plan the following must be shown:

- replaceable type filters (\*);
- replaceable sand-type filters;
- 2000 sq. ft. of site suitable for irrigation, with approval from the city plumbing department, regardless of whether the site is on a hillside or not.

Pools in hillside areas require grading inspection and areas of critical soil require inspection by the city plumbing department.

A pool must be an accessory to a main building in residential zones.

Springboards are not permitted if the pool is less than 7 ft. deep.

Where permits are required the plans must be signed by a licensed engineer.

The use of chlorine gas (for purification) in over 35-lb. cylinders or bromine in any quantity, is controlled by the Los Angeles Fire Department.

Pools accessory to apartment houses are considered public for health and safety requirements, but private for zoning requirements.

Disposal of excavated material is important to the Building and Safety Department. Any question about disposal should be referred to the grading section: MI 5211, Sta. 2942.

Pools, where resting against natural ground, must be designed for earth pressures inward of 30 lbs. per sq. ft. on a 33 degree angle of repose.

If walls of the pool do not rest against natural soil the pool must be designed for water pressure outward.

The design of concrete pools is based on Division 26 of the Los Angeles City Building Code, an entire chapter covering the city's requirements for concrete construction. All pools must be designed for surcharge loads.

Minimum steel reinforcing in either direction must be 1/10 of 1% of the cross sectional area, with maximum spacing of 18 in.

The installation of gunite pools is governed by Sec. 91.2611 (Pneumatically Applied Mortar) of the Los Angeles City Building Code. Exceptions to Sec. 91.2611 are:

- gunite concrete (Grade B) swimming pools do not require continuous inspection if designed for Grade "C" concrete stresses.

b. 2 in. of minimum protection will suffice in lieu of 3 in. where concrete is deposited directly against earth, as set forth in Sec. 91.2610 (d).

Permission to construct steel swimming pools requires special action by the Board of Building and Safety Commissioners.

There are no calculations on plastic-lined pools with concrete sides if they are built on natural ground, providing the retaining wall sides for such a pool are not over 4 ft. in height, measured from the bottom of the footing to the top of the wall, unless supporting a surcharge. A grading permit is required for such a pool in a hillside area.

The city's requirements for plumbing work in connection with swimming pools are covered in Sec. 94.20613 of the Los Angeles City Plumbing Code. However, it is anticipated that more rigid requirements for this type of work will soon be in effect, to be covered in a proposed entirely new section (Div. 3 of Part 6) of the city plumbing code. It will go to the board for consideration, probably within the next 30 days.

There is nothing in the Los Angeles City Electrical Code that specifically mentions swimming pools. However, all motors, materials, etc., used for the purpose must be approved under general codes.

### L. A. County Requirements

MINIMUM REQUIREMENTS for swimming pool construction in the unincorporated areas of Los Angeles County are essentially the same as those in the



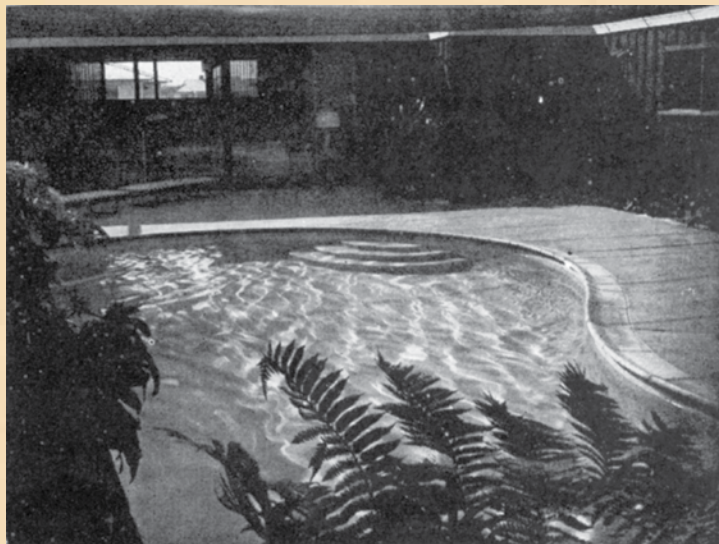
*Tile and coping set around pool's edge by skilled craftsmen serve to make maintenance easier as well as add decorative touch*

City of Los Angeles in respect to design. Designs are based on Chapters 23 and 26 of the Uniform Building Code, used by the county.

Los Angeles County requirements for plumbing used in connection with swimming pools follow the regulations listed under Appendix F of the Uniform Plumbing Code. These standards apply only to outdoor swimming pools. Plans and specifications for all indoor installations must be submitted to the administering authority for approval.

The Los Angeles County Electrical Code makes no specific mention of wiring and fixtures for swimming pools. However, the county follows the state regulations pertaining to approved electrical equipment and materials.

Most of the other municipalities in Southern California use the Uniform Building, Plumbing and Electrical Codes, or codes that are based thereon.



*Pool-patio at Anthony home looking toward the house. Living room is at left*