



# CODE WISE

## PIMA COUNTY BUILDING CODES

### An Informational Newsletter

July 7, 2003

4

Volume

## Why do I need to obtain a building permit?

This is a question that is asked daily in the Building Codes division. The simple answer is that it is the law, however, to answer in a more personal way: Your home or business is an investment. If your construction project does not comply with the codes adopted by Pima County, the value of your investment could be reduced. Property insurers may not cover work done without permits and inspections. If you decide to sell a home or building that has modifications without a permit, you may be required to tear down the addition, leave it unoccupied or make costly repairs.

A property owner who can show that the code requirements were strictly and consistently met—as demonstrated by a code official's carefully maintained records—has a strong ally if something happens to trigger a potentially destructive lawsuit.

Your permit also allows the code official to protect the public by reducing the potential hazards of unsafe construction and ensuring public health, safety and welfare. By following code guidelines, the completed project will meet minimum standards of safety and will be less likely to cause injury to you, your family, your friends or future owners.



## WHAT IS A "CERTIFICATE OF OCCUPANCY"?

A Certificate of Occupancy is a certificate that is issued by the Building Official when a building or structure complies with the current codes for the construction requirements and intended use of the building. When a Certificate of Occupancy is issued by the Building Official, the building or tenant space may then be occupied for the intended use.

Numerous inspections by the Fire District reveal that many places of business have no Certificate of Occupancy posted. The administrative code requires that the certificate of occupancy be posted in a conspicuous place on the premise and not be removed except by the building official.

Obtaining a Certificate of Occupancy ( C of O ) is not that complicated and often a misunderstood processes. For new buildings and tenant improvements a certificate of occupancy is issued when the work that was permitted is

*(Continued on page 8)*

**Try this for your GAS problem instead of an Anti-Acid**

1- Obtain the gas demands of each of the appliances which will be connected to the system. If exact demands cannot be obtained an estimate can be made using Table FGA-1 in Appendix A of the IRC.

2- Develop a "Gas Demand" table as in example and total all of the demands in Cubic Feet per Hour (CFH). **In the example this is 260CFH** (Natural gas in Pima County is delivered at 1000 BTU/CF).

Appliance	Demand (BTU)	Gas Rqmt. (CFH)
Range	65000	65
Fireplace	25000	25
Water Heater	50000	50
Furnace	120000	120
Total		260

The "Developed Length" for the system is obtained by measuring the distance from the GAS METER to the FURTHEST APPLIANCE on the system. **In the example (plan and isometric to right) it is 72ft.** to the furnace. If using only a lan view add 20' to the total to account for going up to the overhead (10') from the meter and down to the appliance(10').

4- With those two figures established, go to **Table G2412.3(1) in the IRC.** (A portion of that table is

excerpted below.)

A) Go across the top row (Length of Pipe [ feet ]) to a column which is headed by a figure which is **equal to or greater than the Developed Length.** (In this case: 80)

B) This column is the one used for sizing all of the piping in the system.

Go down the column until you find a CFH which is equal to (or next greater than ) the

*(Continued on page 3)*

TABLE RG2412.3(1) - [Table FG402.3(1)]  
 MAXIMUM CAPACITY OF PIPE IN CUBIC FEET OF GAS PER HOUR FOR GAS PRESSURES OF 0.5 PSI OR LESS AND A PRESSURE DROP OF 0.5 INCH WATER COLUMN  
 (Based on a 0.60 Specific Gravity Gas)

NOMINAL IRON PIPE SIZE (inches)	INTERNAL DIAMETER (inches)	LENGTH OF PIPE (feet)											
		10	20	30	40	50	60	70	80	90	100	125	150
1/4	.364	43	29	24	20	18	16	15	14	13	12	11	10
3/8	.493	95	65	52	45	40	36	33	31	29	27	24	22
1/2	.622	175	120	97	82	73	66	61	57	53	50	44	40
3/4	.824	360	250	200	170	151	138	125	118	110	103	93	84
1	1.049	680	465	375	320	285	260	240	220	205	195	175	160
1 1/4	1.380	1,400	950	770	660	580	530	490	460	430	400	360	325

(Continued from page 3)

(Refer to the IRC section R2413 & R2414)

Gas piping is typically installed underground from the main to the meter which is usually next to the structure. The piping is then run above ground, over and /or on the structure to the appliances.

Some of the more commonly used pipe materials are:

- A) Schedule 40 steel or wrought iron,
- B) Schedule 40 galvanized iron pipe,
- C) Plastic pipe manufactured for, and identified (marked) for gas systems. This is only used in underground installations
- D) Metallic tubing, seamless copper, aluminum alloy or steel tubing

Note: metallic piping must be wrapped ancoated when used underground.

Additional materials are listed in the IRC Section G2413, but the above are the most commonly used.

Other items to be considered in the installation are:

- 1) Minimum burial depth for metallic pipe is 12" and for plastic is 18".
- 2) When necessary the run under the slab, such as to an island range, the pipe must be in a sleeve which is sealed and vented to the outside.
- 3) The pipe is not to be run under ground beneath buildings except for singular instances such as item 2 above.
- 4) Piping installed in concealed locations shall not have any unions, tubing fittings, right and left couplings, bushings, compression couplings and swing joints.

### Testing

When the system is installed it must be given a pressure test which will have to be observed by the Inspector. This test is to be a minimum 3 psi for at least 10 minutes with no discernable loss of pressure. This test is only done with air or nitrogen. Natural gas or propane is not to be introduced to the system until the pressure test is accepted.

i

## A Note from the President of The Southern Arizona Chapter of ICC (SACICC)

One of the first things the folks that have been around for awhile notice is the name change of the chapter. Formerly the chapter was affiliated with ICBO the publisher of our past building codes. Now with ICC we have become a member of the International Code Council as one of its many chapters throughout the country.

The goals of SACICC are outlined in our bylaws. Building safety, developing codes, work with ICC for uniformity, support and participate in educational seminars and training, and to advance the professional skills of those involved in the enforcement of building codes. One of the most important, and a focus for me, is the education of our members and those within the construction industry. We have had several seminars covering various subjects and we plan to have more.

A question has come up regarding renewal and maintenance of professional certifications. ICC is honoring the current certifications of its members. There is a twist however, the maintenance of certifications will involve a system of points regarding working in the field, continuing education, additional certifications and nine other ways to maintain your certifications. You should log onto the ICC web site at [www.iccsafe.org](http://www.iccsafe.org) and look under certifications. There is a lot of other information at this site so check it out. Also this chapter has a site at [www.southernazicc.org](http://www.southernazicc.org).

Our chapter is growing and has great participation from Pima County, Oro Valley, Sierra Vista, Sahuarita, Marana, Pinal County, Cochise County, Santa Cruz, Tucson Fire Department and several building companies, and inspection and plan review companies. We look forward to the City of Tucson joining us in our activities. We want their staff to participate so if you know someone who inspects or reviews plans for Tucson talk to them and invite them to participate. We have kept our fees low and provide benefits for membership.

Stay in touch, let me know what you need as a Chapter Member, or as a professional working in code enforcement or as a contactor or designer and what improvements you feel may be needed within the Chapter. Your input is important!

Jack Holden, Chapter President  
[jholden@marana.com](mailto:jholden@marana.com)

i

(Continued from page 4)

- walls, outcroppings, and etc.
  - 5. Provide dimensions of required guards.
  - 6. Show and label pool dimensions.
    - a. Indicate the length, width, and depth of the pool
    - b. **Note:** pools over 30 feet wide require 2 exits.
    - c. Indicate the pool floor slopes.
  - 7. Indicate location of pool steps.
  - 8. Indicate location of swim out benches, ladder(s), recessed treads, handholds, handrails, and etc.
  - 9. Indicate location of slides, slide foundation, and slide anchorage.  
**Note:** Structural calc by an Arizona licensed structural engineer may be required.
  - 10. Indicate location of diving boards, diving board foundation, diving board anchorage, diving plat forms, and etc.
  - 11. For diving pools:
    - a. Indicate type of diving pool
    - b. Show and label minimum diving water envelope dimensions for diving pool type.
- k) **MECHANICAL:**
- 1. Pool heater specification.
    - a. Gas, Input BTU
    - b. Electric, KW
- l) **PLUMBING:**
- 1. Indicate each pool pumps horse-power
  - 2. Pool fill – hose from hydrant usually.
  - 3. Make-up water – positive back-flow prevention device; i.e., a reduced pressure principle back-flow prevention device, period. Show/route/size on plan.
  - 4. Gas meter location.
  - 5. Show/route/size gas line to heater at pool equipment enclosure and provide length of run from meter.

m) **ELECTRICAL:**

- 1. Pool/spa heater control circuits (one each).
- 2. Pool/spa pump control circuits (two each).
- 3. Lighting circuit (one).
- 4. Time clock (two/one circuits) – other controls
- 5. Source of power – locate on plan.
- 6. Sometimes separate panel.
- 7. GFCI outlet within 10’ minimum and not more than 20’ from inside wall of pool.



## Cody Says:

### “Arc-Fault? Not Yet!”

The Code states that “All branch circuits that supply 125-volt, single phase, 15 and 20—ampere receptacles outlets in bedrooms shall be protected by arc-fault circuit interrupters.”

Since there is currently no equipment available to test the operation of the arc-fault circuit interrupters, the Chief Building Official for Pima County has determined that this code provision is unenforceable.

When an approved test unit becomes available, the construction industry and the public will be notified and given a reasonable time to comply before enforcement of this code provision.

## The More Common Instances Requiring Soils Reports in Residential Design.

**Footings on fill** require a soils report and a special inspection by a geotechnical engineer. Installing a pad and then getting a soils compaction Test is not allowed per the code.

**Fill under the slab** which is over two feet deep requires Special Inspection and a soils compaction test done by a geotechnical engineer.

## **2. GRADING/HILLSIDE/ FLOODPLAIN SITE PLAN RE- QUIREMENTS:**

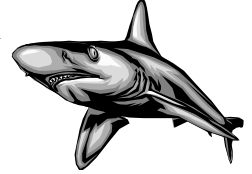
- a) **All** required items must be drawn to scale or fully dimensioned.
- b) Show and label grading limits around all proposed areas of disturbance.
- c) Show and label all **platted** floodplain lines, erosion hazard setback lines, drainage easements & Exclusive Easements for County Use (EECs).
- d) Show and label all existing and proposed structures, including fences/walls/pools.
- e) Show and label all **platted** Sight Visibility Triangles/Easements (SVTs/SVEs).
- f) Show and label any protected peaks or ridges that are on the parcel.
- g) If topography on the lot indicates that the proposed disturbance **may** involve cuts or fills at or near 5 feet, show 2 foot contours within grading limits to demonstrate the exact height of cuts or fills.
- h) Show method of stabilization (i.e. rip-rap, retaining walls, etc.) for all cuts or fills over 2 feet.
- i) **If proposed area of disturbance encroaches into a 15% slope:**
  1. Draft grading limits around all existing and proposed areas of disturbance, including septic systems and utilities.
  2. Show 2-foot contours within grading limits.
  3. Show 10 foot contours on all areas of the lot that are outside of the grading limits.
- j) If a Grading Permit has been previously issued for this property (for example, a house permit), provide a copy of the Pima County approved site plan for that Grading Permit. The pool company is to coordinate with the owner/builder to ensure that any existing walls or grading have been permitted.



## **3. BUILDING CODES:**

Building Codes will review pool setbacks that are identified as being closer than 4 feet from any structure and all pool

enclosures, (**clearly indicate existing walls/fences versus new walls/fences with lengths and heights**).



- a) Pools wider than 30 feet **must** be reviewed for life safety and exit requirements.
- b) Pools that are not started off an approved Pima County Building Codes model plan must be fully reviewed by all departments for code compliance.
- c) A current structural plan is required. If the pool is not built off a model plan submit structural pool plan with non-structural pool and deck plan.

## **4. BUILDING CODES NON- STRUCTURAL POOL/DECK REQUIREMENTS:**

- a) **ARCHITECTURAL:**
  1. Indicate pool classification. (For example, residential, semi public, public, above ground, fiberglass)
  2. Indicate if pool is diving or non-diving.
  3. Show and label site dimensions from structures, fences, outcroppings, easements (indicate type of easements), and etc.
    - a. **Minimum distance from property line is 4 feet.**
    - b. **Minimum distance from structures/fences/walls is based on lines of influence.**
    - c. Safety glazing is required for glass located within 5 feet of the pool.
  4. Show changes in elevations at retaining walls, negative edge pool

(Continued on page 5)

(Continued from page 2)

Go down the column until you find a CFH which is equal to (or next greater than ) the total demand of the system. In the example the total demand is 260 and in the 80 column the one which is equal to or next greater is **460**. The pipe size which leads this row is **1-1/4"**. This is the size of the line into the house from the meter.

C) Stay in the 80 column and, proceeding from the meter to the first junction: there is **25 CFH** required to the FP; this requires the line there to be **3/8"** (although 1/2" would normally be installed as 3/8 is uncommon).

D) At the juncture for the Range a 3/4" goes to the range ( 65 CFH ) and a 1" goes over to the WH and furnace as they have a demand of 170 CFH which is between the 118 and the 220 on the table so the size line is determined by the "equal to or greater than" requirement.

E) At the "Tee" for the WH and Furnace, the line to the WH can reduce to 3/4" for its' connection.

F) The Furnace requires a 1" line as it needs 120 CFH and a 3/4" will only carry 118 CFH. ( The equal to or greater than measure).

**Note: the key to sizing the system is the total demand on the system in conjunction with the developed length of the system. The method assumes all of the appliances will be on at one time, and the demand of the one the furthest from the meter sets the size so as not to be "starved" for gas.**

When sizing a system for use of propane the total-BTU's can be divided by 2500 as it has 2500BTU per CFH. Therefore in the example the total demand for a propane system would be 116 CFH (290/2.5). Then the system would be sized accordingly in steps 4 through 6.

### Gas Piping materials and Installation

(Continued on page 6)

## PIMA COUNTY DEVELOPMENT SERVICES RESIDENTIAL POOL REVIEW PROCESS

This article is the text of a handout which is available in the Building Codes section of Development Services and on the web site:

[www.pimaexpress.com](http://www.pimaexpress.com)

The following check list has been developed as a guide to facilitate processing Residential Pool and Spa Permits. The permitting process begins at the Public Service Division counter. Applications shall include 1 copy of reproducible or 2 copies of non-reproducible plans. After Public Service, the **order of review** is generally Zoning, Grading/Hillside/Flood plain, and Building Codes. The application and plans are reviewed by each division for regulation and/or code compliance prior to forwarding to the next division. In Order to help guide the applicant, a diagrammatic plan of the first floor Development Services Department is attached with division phone numbers for plan check status. After approval of all divisions, the plan(s) and application will be forwarded to the Public Service Division counter for tabulation of fees and notification of permit approval.

### 1. ZONING:

Zoning reviews pools and spas for set back requirements from property lines and pool/spa surface area for **Zoning fees only**.

(Note: Zoning will add any enclosures/walls/fences by linear footage and heights that are on the "application" form, otherwise Zoning does not review for enclosures.)



(Continued on page 4)

## PIMA COUNTY ENACTS NEW BED & BREAKFAST ORDINANCE



On June 6, 2003, a new ordinance went into effect which regulates the development of Bed & Breakfast establishments within Pima County.

The new ordinance requires Bed & Breakfasts containing one to four

guest bedrooms in rural and residential zones to obtain a Type I conditional use permit, and Bed & Breakfasts containing five to eight guest bedrooms to obtain a Type II conditional use permit. Establishments containing more than eight guest bedrooms will be processed as a Minor Resort.

Previous to the adoption of the ordinance, Bed & Breakfast establishments were permitted under the home occupation provisions of the zoning code. A change was necessary because the home occupation requirements and standards did not adequately address Bed & Breakfast operations.

An ad hoc committee of the Planning and Zoning Commission, consisting of Bed & Breakfast owners and neighborhood representatives, met for almost a year drafting development standards which were acceptable to the Bed & Breakfast industry, as well as affording neighborhood protection by allowing resident input during the permitting process.



Those persons interesting in obtaining a Bed & Breakfast permit can pick up an application form at the zoning counter in the Public Works Building located at 201 North Stone Avenue. Questions regarding the conditional use process can be directed to Tom Hudson at 740-6973.

i

## COMMON ARCHITECTURAL/ BUILDING ITEMS MISSING ON PLANS

Door between garage and house not called out per code.

Door must be solid core or steel or 20-minute fire rated.

Provide a raised platform for mechanical equipment in garage.

Garage floor must slope toward the door or a drain. This is also required for post tensioned garage floor slabs.

Wood post at exterior concrete slabs must be 1 inch above the concrete surface.

Special inspection is required for epoxy set post bases.

Provide moisture resistant gypsum board at showers.

Handrails are required for stairs with two or more risers.

Provide MEC calculations.

Provide 21 inches of clearance in front of toilets

Egress windows must have a sill a height of not more than 44 inches.

Call out the rise and run for all stairs.

Call out the slope amount for all roofed areas.

Provide a soils report for all footings on fill.

Windows within 24 inches of the swing of a door must be tempered glass.

Call out for ½ inch gypsum board {min.} for garage walls and ceiling when attached to a residence.

Provide weep screeds for stucco walls. { Not required at masonry walls.}

Note that floor slab is 6 inches above finished grade.

Truss calculations must be designed per the 2000 IBC code.

Wood ledgers on masonry walls must be 3 inches thick.

Provide a bond beam at the top of all masonry walls.

Special inspection is required for concrete over 2,500 psi.

Surface straps are not permitted for beam to post connections.

Plans done in pencil are not acceptable. Provide a zeroxed copy.

i



The 2003 Fall Education Institute Will be held in Tucson, Arizona The week of October 20-24.

Visit the AZBO web site at: [www.azbo.org](http://www.azbo.org)  
A complete listing of the courses and course descriptions is available on the website.



### Commercial Electrical Inspection Class 8/14 & 8/15

This will be a one day class (repeated) and will be conducted by the Southern Arizona Chapter of the International Code Council (SAICC). It will be held at the Marana Operations Center.  
Contact Jack Holden @ 520-360-4009,  
e-mail: [jholden@marana.com](mailto:jholden@marana.com) for additional information.

## WHAT IS A "CERTIFICATE OF OCCUPANCY"?

A Certificate of Occupancy is a certificate that is issued by the Building Official when a building or structure complies with the current codes for the construction requirements and intended use of the building. When a Certificate of Occupancy is issued by the Building Official, the building or tenant space may then be occupied for the intended use.

Numerous inspections by the Fire District reveal that many places of business have no Certificate of Occupancy posted. The administrative code requires that the certificate of occupancy be posted in a conspicuous place on the premise and not be removed except by the building official.

Obtaining a Certificate of Occupancy ( C of O ) is not that complicated and often a misunderstood processes. For new buildings and tenant improvements a certificate of occupancy is issued when the work that was permitted is completed and after an inspection by the building official finds no violations of the provisions of the code or other laws which are enforced by this jurisdiction.

When a building or tenant space is existing and occupied by a new owner or tenant, a new Certificate of Occupancy is required even if no work is being done to the building.

If you are a new owner or new tenant, you must obtain a Certificate of Occupancy even if you are not doing any work to the building. When there is no work done or no change in use or occupancy of the building or tenant space, the process of obtaining a Certificate of Occupancy is streamlined by simply providing a dimensioned floor plan showing the following information:

- a. The current use of the tenant area or building.
- b. The proposed use of the tenant area or building.
- c. The area in sq. ft of the tenant area or building.
- d. The location and number of exits there are from the tenant area or building.
- e. Does the building have a sprinkler system?
- f. Are there restrooms in the tenant area?
- g. Are the restrooms handicapped accessible?
- h. The number of stories and the story in which the tenant area is located?

Remember, the burden of providing this information is on the applicant We cannot help you without this information.

When there is a change in use or occupancy of the building, then other provisions of the code are applicable. In this case a complete set of plans are required of the building showing compliance with the provisions of the code that are applicable for the intended use and occupancy.

i

CODES in Effect in Pima County	
Code	Effective Date
International Residential Code (IRC- 2000) IRC includes Structural, Mechanical, Plumbing and Electrical	March 6, 2001-
International Building Code (IBC-2000)	March 6, 2001
International Mechanical Code (IMC- 2000)	June 22, 2001
International Energy Conservation Code	June 22, 2001
International Property Maintenance Code	June 22, 2001
1994 Uniform Plumbing Code (For Commercial use only)	February 5, 1996
1999 National Electrical Code	June 22, 2001
1999 Spa and Pool Code	June 22, 2001
Outdoor Lighting Code	September 21, 2000

Copies of these codes are available at the main branch of the Tucson-Pima County Library.

Help-Line 791-4010

Copies of some are available for purchase at :

Pima County Building Codes, 201 N. Stone.

Ph. 520-740-6490

Purchase on line at:  
[www.ICBO.org](http://www.ICBO.org)  
Ph. 1-800-423-6587

Useful Telephone	Numbers
PC Bldg. Codes and Plan Review	740-6490
PC Bldg. Codes FAX	740-6555 740-6888
Inspection Request	740-6499
Building Inspectors between 7AM and 7:30AM	292-2255 293-5657
PC Zoning Enforcement	740-6470
Zoning Information	740-6450
Public Service	740-6510
City of Tucson	791-5550

Prepared by the **Plans Review Staff** of the Building Codes Division of Development Services Department.

**Carmine DeBonis, Director, Carla Blackwell, Deputy Director Development Services, Bill Jones, Chief Building Official**

The information provided herein is for information only and is not to be interpreted as superceding the codes as adopted by Pima County but should only be used as an aid in understanding the requirements of those codes to facilitate compliance.