



CODE WISE

**PIMA COUNTY
BUILDING CODES
An Informational Newsletter**

Volume 2

January 6, 2003

Letter from the Director

Development Services Department adopted the following mission statement to guide its delivery of products and services:

Pima County Development Services, through its knowledgeable, friendly, and helpful employees, protects and enhances public health, safety, and welfare, and promotes the sound stewardship of the natural and built environment by providing high quality, fiscally responsible, and timely land use planning, development review and permitting services.

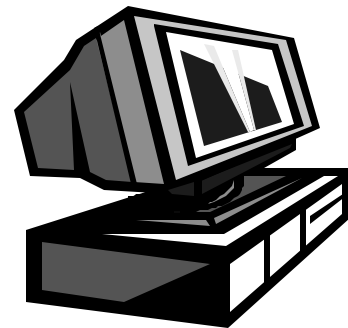
The staff of the Building Codes division has taken this mission to heart. Code Wise is a publication created by the staff to better serve you. By providing our customers with timely code changes, hints for construction, and permitting information, we are meeting goals of this department to provide high quality information to our customers and consequently increasing customer service satisfaction. If you have any suggestions for the next issues, please submit them to our Building Codes counter.

We recently completed a customer survey of our department. If you filled out a survey, thank you for participating in the survey. The results will be tallied in the next couple of weeks and your ideas and comments will be acted upon.

As we strive to meet your demands, we will be implementing improvements to our process. Keep watching the issues of Code Wise for announcements concerning our changes.

Thank you

Carmine DeBonis, Jr.
Development Services Director



ANNOUNCING A NEW SIGN-IN STATION

There is a new sign-in station in the Building Codes section of Development Services. This station has been set up to assist the Building Codes staff to expedite processing your requests.

Upon approaching Building Codes, you will see a computer terminal on the East wall. This terminal is for the public to log in for service. Just follow the instruction sheet at the terminal and the information you provide will help the Building Codes staff expedite your needs.

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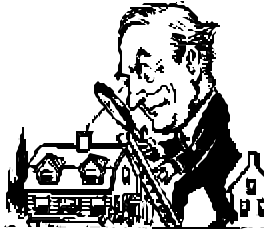
WHY CAN'T I PASS MY INSPECTIONS ?

WHY CAN'T I PASS MY INSPECTIONS?

Here is a list of some common reasons inspection fail:

SITE:

- Address or lot number not clearly indicated at site.
- Pima County approved construction plans and plot plan not on job site.
- Inspection card (hard card) not on site.
- Plans and inspection card are not readable.
- Contractor is not following the approved plan details.
- Plan changes without county approval.
- Site setbacks incorrect.



BUILDING:

- Attempting to change sealed engineered plans without engineer's approval.
- Job has not been walked by the contractor or superintendent to determine that it is ready for county inspector to approve.
- Work is covered up prior to inspection and approval.
 - Footing not 12" into undisturbed soil.
 - Debris, loose dirt or roots in trench.
 - Incorrect lap of rebar
 - Incorrectly spaced anchor bolts; not within 12" of plate ends and not embedded 7".
 - Incorrect location of hold-downs (not following manufactures or engineers requirements).
 - Stem wall less than 6" wide.
 - County approved engineer's sealed truss plans not included with plans.
- Trusses not braced per approved plan.
- Trusses damaged or modified without engineer's approval and re-design.
- Wrong hanger used. Hanger not designed to carry imposed load.
- Incorrect hole size and location in I-joist web.
- Over penetration of nails or staples of OSB and plywood.

- Incorrect gap during placement of OSB and plywood.
- Over notching and over boring of plates and studs.
- No landing at door.
- Tempered glazing not installed in a window adjacent to a door where the nearest vertical edge is within a 24" arc of the door in a closed position and whose bottom edge is less than 60" above the floor or walking surface.

(Plumbing, mechanical, and electrical inspections failures to be in future articles)

CONTRACTOR'S OWNER BUILDER'S RESPONSIBILITIES

Contractors are licensed by the State of Arizona and they are responsible for compliance with all current codes. **If you are an owner-builder you assume that responsibility.**



REQUIREMENTS

R109.3 Inspection requests. It shall be the duty of the person doing the work authorized by a permit to notify the building official that such work is ready for inspection. It shall be the duty of the person requesting and inspections required by this code to provide access to and means for inspection of such work.

R109.4 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the

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building official.

305.8 Reinspections. A reinspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.

This section is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of the technical codes, but as controlling the practice for calling for inspections before the job is ready for such inspection or reinspection.


Reinspection fees may be assessed when the inspection record card is not posted or otherwise available on the work site, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or for deviating from plans requiring the approval of the building official. **i**

NOTICE!! **PRE-SUBMITTAL PLAN REVIEW**

The Building Code division now offers pre-submittal plan review for larger projects to better serve our customers. Plans will need to be at least 60% complete and 5000 sqft or larger. This service is offered at an hourly rate by an appointment only. Contact the Chief Building Official, Bill Jones at 740-6484 for information.

Codes Education Opportunity

AZBO Spring Education Institute



April 21-25, 2003

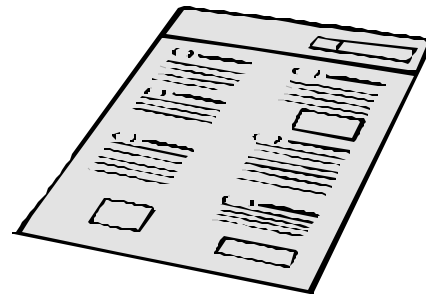
Will be held at:

The Prescott Resort

1500 Hwy 69

Prescott AZ 86301


Classes will be held on Residential Inspection, Building inspection, Building Classification Residential Electrical Inspection, Property Maintenance, Means of Egress and many more subjects. The Arizona Building Officials and the Arizona Fire Marshals Association invite you to attend. Call AZBO at (520) 498-2425 or e-mail at: registrar @azbo.org



OPINION POLL RESULTS BEING TABULATED TO MEET OUR CUSTOMERS NEEDS

In November all the divisions in Development Services asked all customers to fill out our survey.

We have had a good response and would like to thank you all for your suggestions and comments. In addition, please note that November does not end our desire to improve our customer service. We welcome your suggestions and comments any time. Survey forms for all office staff are available at all Counters in Development Service and surveys for field staff are available at the building code counter. **i**



Bar-B-Que Safety

We want you to enjoy your backyard barbecue. To reduce the risk of fire or explosion with gas grills, you should:

1. Trade in any gas tank which does not have the new over-fill protection device (OPD) These have a distinct triangular hand wheel on the valve.
2. Check grill hoses for cracking, brittleness, holes and leaks. Make sure there are no sharp bends in the hose or tubing.
3. Move gas hoses away from hot surfaces of the grill.
4. Always keep propane tanks upright.
5. Never store a spare gas tank under or near the grill or indoors.

A key element of Residential Construction

BRACED WALL PANELS

This is the first of a series of articles on Braced Wall Panels

INTRODUCTION

What is a Braced Wall Panel?

The International Residential Code (IRC) defines a Braced Wall Panel as:

BRACED WALL PANEL. A section of a braced wall line constructed in accordance with §R602.10 for wood framing or §R603.7 or §RR603.8.1. which extend the full height of the wall

And a Braced Wall Line as:

BRACED WALL LINE. A series of braced wall panels constructed in accordance with §R602.10 for wood framing ... to resist racking from seismic and wind forces.

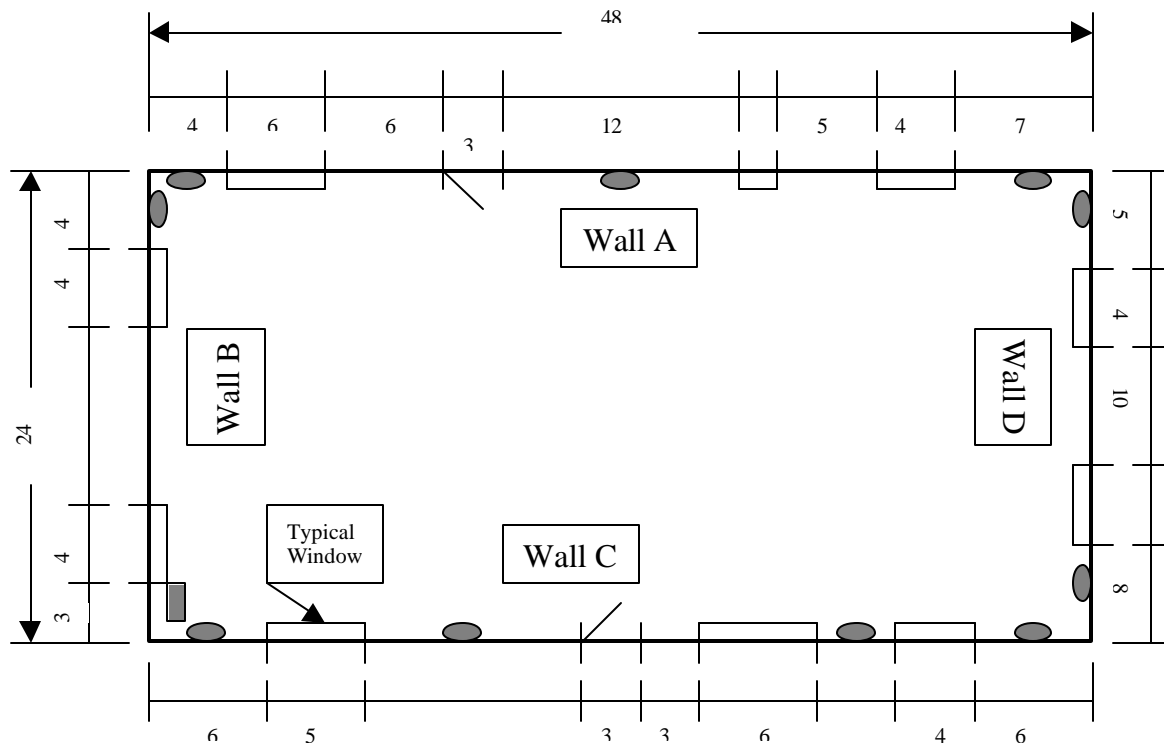


A braced wall panel (BWP) then is an element of wall construction that is designed to resist the racking forces that a structure experiences during high winds or a seismic event. A building will have a number of these panels throughout its structure to provide the required rigidity, strength and stability.

These are also addressed in the International Building Code (IBC) with similar definitions; however, they are called “Shear Panels” and “Shear Walls” respectively. The concept in both codes is the same: the design of a structural element to provide stability by resisting the “racking” (twisting) which is caused by the force of the wind against the side of a building or from seismic forces acting on the structure.

Since the IRC has been written to allow for a simplified “prescriptive” design of a single family residence (SFR), and the IBC is more technically oriented, requiring calculations be performed by a design professional, this discussion will be confined to the requirements of the IRC. By “prescriptive,” it means that there are certain design parameters presented in the IRC, which if used exactly as presented, allow a person to design a structure that will meet

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the Code requirements for safety and durability. Additionally, this discussion will be confined to wood frame SFR construction only.

How are BWP's located in a Structure?

For the sake of simplicity, the discussion will be confined to a simple rectangular, one story structure, 48' on the long side and 24' on the narrow side (see the sketch below).



The IRC requires that each wall of the structure must be considered for the size, type and location of brace wall panels. These must be located on each end of a wall and at least every 25' on center. In the example below the wide walls (A & C) would need at least 3 panels and the narrow walls (B & D) 2 panels.

There are eight (8) different construction methods for brace walls (re: IRC-R602.10.3). The most common in use in Pima County is "Method 3"- Wood Structural Sheathing (re: IRC-R602.10.3,3); as, the most typical type of wall is 2x's at 16" OC with 5/16" OSB or plywood sheathing (Note: the exterior finish does not enter into the brace panel/wall design).

There are 2 widths of brace wall panel described in the Code: a 48" standard and a 32" "Alternate Brace Wall Panel." The 48" is the simplest as it requires that the panel is to be applied vertically and, if the studs are at 16" OC it is to cover a minimum of three stud spaces, or two stud spaces where the studs are at 24" OC. The sheathing is to be nailed with 6d common nails at 6" OC at all studs.

The "Alternate Brace Wall Panel" is permitted to replace each 4 feet of braced wall panel. It is to be not less than 2'-8" wide with a height of no more than 10'. It shall have one face sheathed with 3/8" wood structural panel sheathing nailed with 8d common nails at 6" OC. Two anchor bolts shall be provided at panel quarter points. Additionally, there shall be a hold-down device that is fastened to the foundation, capable of providing an

uplift capacity of 1800 pounds, at each end stud for tensile and compressive stresses.

In the example above the walls that have an oval (\cup) on them can use a 4' standard BWP; the one which has a rectangle (\square) on it will need to use a 32" alternate BWP.

To meet the requirement that the BWP's are a maximum of 25' OC, there has to be three BWP's on Wall A. There are 4 on Wall C as the spacing of the doors and windows make it impossible to place a standard BWP in the center as was done on Wall A. An alternate BWP could have been placed in the 3' section of wall between the door and the window and met the 25' spacing; however, it may have been more costly due to the additional hardware required.

Summary (Based on the Prescriptive Method in the IRC)

- All Structures require BWP's.
- BWP's are to be installed from the bottom to the top plates,
- BWP's are required to be on each end of each wall of the structure and are to begin within 12.5' of the ends.
- BWP's are to be a maximum of 25' OC.
- Standard BWP's are 4' wide and only require additional nailing and blocking.
- BWP's are to have the long dimension of the paneling parallel to the studs.
- Alternate BWP's are 32" wide, and require 2 anchor bolts and hold-downs on double studs at both ends.

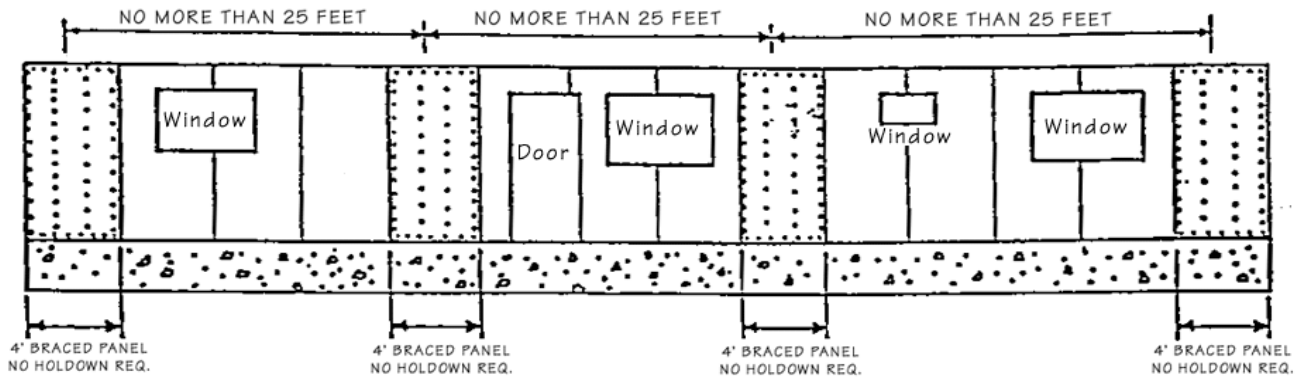
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CODE WISE On the WEB

Look on the Development Services web site :
www.pimaxpress.com
for the most current and past issues of
CODE WISE.

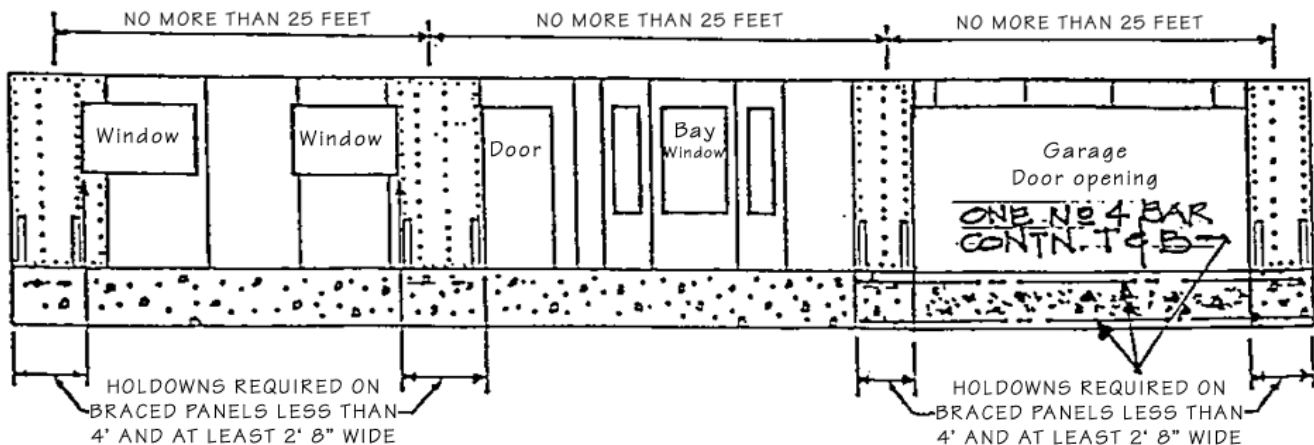
EXAMPLES OF BRACED PANELS FOR CONVENTIONAL LIGHT FRAME HOMES

ONE STORY WITH 4 FOOT PANELS



EXAMPLES OF ALTERNATE BRACED PANELS WITH HOLDOWNS

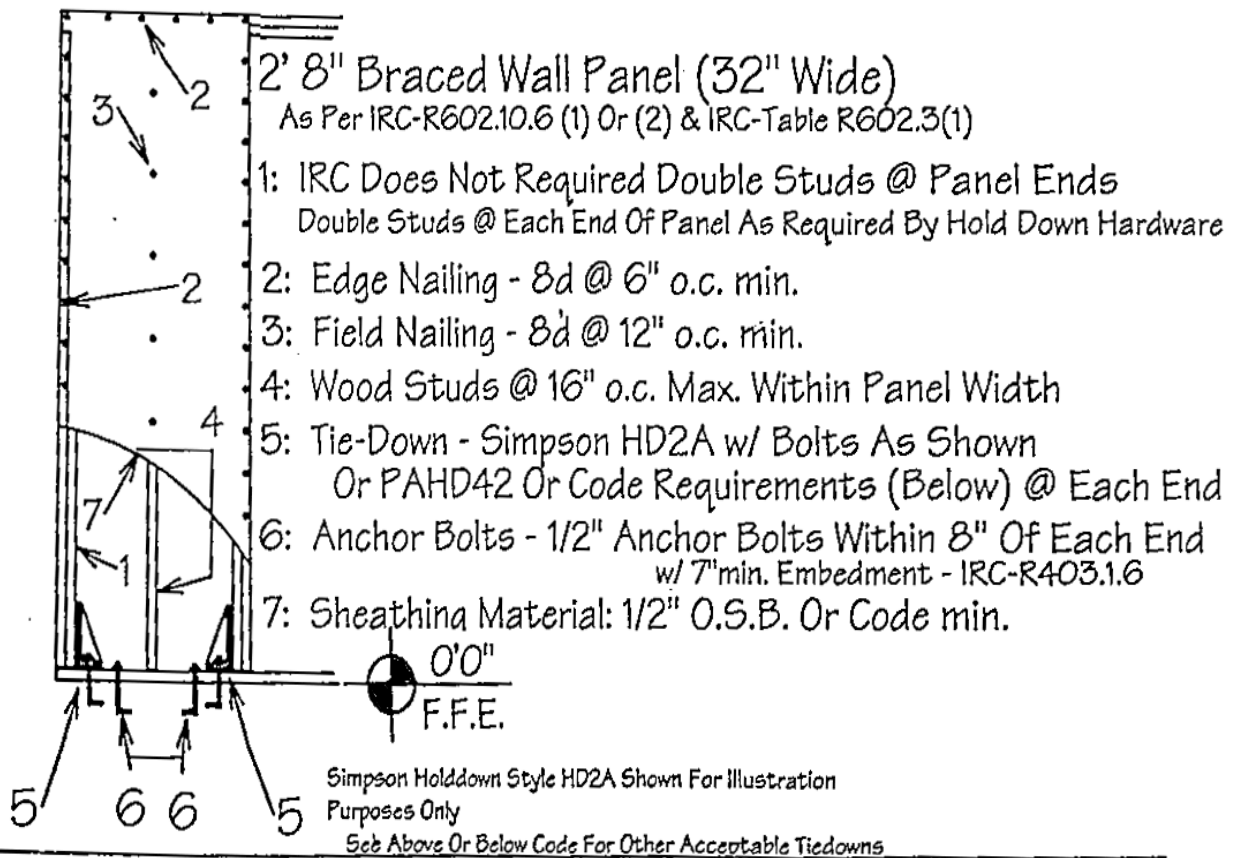
ONE STORY WITH BRACED PANELS LESS THAN 4 FEET WIDE BUT AT LEAST 2 FEET 8 INCHES WIDE



TYPICAL 2'-8" ALT. BRACED WALL PANEL DETAIL

NOTE:

REQUIREMENTS FOR BRACED WALL PANEL
SIMILAR, EXCEPT 2 ANCHOR BOLTS
REQUIRED AND NO HOLD-DOWN DEVICES.



One-Story Buildings IRC-R602.10.6 (1): Braced Wall Panels:

Two Anchor Bolts Shall Be Installed In Accordance w/ IRC-R403.1(1) In Each Braced Wall Panel
& Anchor Bolts Shall Be Placed @ Panel 1/4 Points

& Each Panel End Stud Shall Have A Tie-Down Device Fastened To The Foundation,
Capable Of Providing An Uplift Capacity Of At Least 1,800 Pounds.

The Tie-Down Device Shall Be Installed In Accordance w/ The Manufacturer's Recommendations
If Panels Are Located In The First Of A Two Story Building, See IRC-R602.10.6 (2)

What is a Deferred Submittal?

A deferred submittal is a structural component of a building such as prefabricated trusses, stairways, or even a manufactured metal building where the plans for that component are submitted for approval after the permit is issued but before they are installed. Items to be submitted as Deferred Submittals are required to be identified on the permit plans as a Deferred Submittal. The notes below on Deferred Submittals shall be placed on the permit plans.

DEFERRED SUBMITTALS:

Shop drawing submittals, submitted during construction and required by the general structural notes which contain design calculations and seals by a registered engineer other than the engineer of record, shall first be reviewed by the engineer of record and determined to be in general conformance with the building design and so state on the plans. The documents shall then be submitted to the building official for review prior to erection.

A building permit will be required and plan check fees collected. These deferred submittal items shall not be installed until their design and submittal documents have been approved by the building official as required by the **Uniform Administrative Code, Sec. 302.4.2.** (NOTE: Pima County has adopted by reference the 1997 Uniform Administrative Code with local amendments).

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Kody Says:

Separation of an attached garage from the residence does not require a 5/8" type "x" gypsum board. Per the IRC, Section R309.2, 1/2" gypsum board on the garage side and attic separation is all that is required

You are still required to have a minimum 1-3/8" solid core wood door or honeycomb core steel doors not less than 1 3/8 inch thick, or 20 minute fire-rated doors. The door does not have to be self closing. (IRC-R309.1)

Ductwork which is in the garage, and penetrates the wall or ceiling separating the residence from the garage, must be a minimum No. 26 gage steel and have no openings into the garage. (IRC-R309.1.1)

Special Inspections

§1704.1 General. Where application is made for construction as described in this section, the owner or the registered design professional in responsible charge acting as the owner's agent shall employ one or more special inspectors to provide inspections during construction on the types of work listed under §1704. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection. These inspections are in addition to the inspections specified in §109.

§1704.1.1 Building Permit Requirement. The permit applicant shall submit a statement of special inspections prepared by the registered design professional in responsible charge in accordance with §106.1 as a condition for permit issuance. This statement shall include a complete list of materials and work requiring special inspections, the inspections to be performed and a list of the individuals, approved agencies or firms intended to be retained for conducting such inspections.

§1704.1.2 Report Requirement. Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report of inspections documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted periodically at a frequency agreed upon by the permit applicant and the building official prior to the start of work.

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**THE FOLLOWING IS REQUIRED TO BE PLACED ON THE COVER SHEET
OR FLOOR PLAN FOR ALL NEW SINGLE FAMILY RESIDENCES:**

“PIMA COUNTY INCLUSIVE HOME DESIGN

1. The ordinance applies to all dwelling units (site built homes) permitted for construction in unincorporated Pima County.
2. Provide at least one exterior accessible route and entrance. The route may originate from the carport, driveway, Public Street or sidewalk. The slope of this route shall not exceed one-foot vertical rise per twenty feet horizontal distance (1:20), unless a ramp per 2000 IRC is constructed.

NOTE: Indicate the Exterior Accessible Route and Accessible Entrance on Single Family Residence site plan.
(**NOT A REQUIREMENT** on model plans)

3. **Accessible Entrance:** Provide, as a minimum, one no-step, level, entrance that is a minimum 32” wide and meets the door hardware requirements per this ordinance. (**Note:** Exit doors are required to be 36” minimum and the garage shall not be used as an exit). The access floor shall have a minimum 36” wide hallway and accessible doors to all spaces and elements that are to be minimum 2’8” door.

NOTE: All doors, hallways and openings are to be clearly dimensioned and indicated on floor plan.

4. Changes in floor levels and thresholds at the accessible entrance and along accessible routes, may be ½” high maximum. These must be beveled from ¼” to ½” maximum with a slope not steeper than 1 inch rise in 2 inch run (1:2).
5. **Door Hardware:** Handles, pull latches, locks and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching or twisting of the wrist to operate. Lever hardware satisfies the requirements of this provision.
6. **Bathroom Wall Reinforcement:** Reinforcement shall be installed, in all bathrooms on the accessible route, to allow the future installation of grab bars on walls adjacent to the tub, shower and toilet. This reinforcement shall be installed flush with the studs and in the following locations:

NOTE: All bathrooms, if more than 1, on accessible floor shall be accessible. At least one bathroom is required on accessible floor.
(Water Closet, Lavatory, and Bathtub or Shower)

Toilet: Installed at 33”-36” above the floor on all adjacent walls. Horizontal length of reinforcement shall be sufficient to allow a 42” grab bar and 24” rear grab bar. **Note:** Nothing in the ordinance requires that toilet be placed by a sidewall.

Tub: Horizontal length reinforcement shall be sufficient to allow for;

- a) Back Wall: Two backing reinforcements: one backing reinforcement horizontal position 33” and 36” above the floor; and one backing reinforcement 9” above the rim of the bathtub. Each backing reinforcement shall be a minimum 24” long and shall be 24” maximum from the head end wall and 12” maximum from the foot end wall.
- b) Foot End Wall: One backing reinforcement a minimum 24” long on the foot end wall at the front edge of the bathtub.
- c) Head End wall: One backing reinforcement a minimum 12” long on the

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head end wall at the front edge of the bathtub.

- d) Shower compartments shall have backing on a minimum of two walls, not to include control valve wall, mounted at 33"-36" above shower floor.

All wall reinforcement shall be capable of resisting shear and bending forces of a minimum of 250 pounds. Reinforcement is not required at the location of vanities, linen closets, and pre-molded shower/tub surrounds, or in a room containing only a sink and a toilet, provided that the room does not contain the only sink or toilet on the accessible floor of the home.

7. Electrical:

- All light controls shall be placed no higher than 48", on center, above the floor.
- Where practical, all electrical receptacles shall be placed no lower than 15", on center, above the floor.
- All thermostats shall be placed no higher than 54", on center, above the floor.

The exceptions to these provisions are as follows:

1. Electrical receptacles serving a dedicated use.
2. Appliance mounted controls or switches.
3. A single outlet where all of the following conditions are met:
 - a) The outlet is above a length of countertop that is uninterrupted by a sink or appliance and
 - b) At least one receptacles is provided for that length of countertop; and
 - c) All other receptacles provided for that length of countertop set no higher than 48".
4. Floor electrical receptacles.
5. Plumbing fixture controls.
6. HVAC diffusers
7. Ceiling fan mounted controls.

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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

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.