"DO I NEED A BUILDING PERMIT?"

Successful home improvement projects have been the pride and joy of many home owners who take the time to organize their projects. The City of Avondale's Development Services Department is dedicated to helping homeowners successfully complete their projects in the most efficient, cost effective manner.

An important part of your improvement project is good planning. This means developing construction drawings, and applying for a building permit before beginning construction. Obtaining the permit helps protect the safety of your family, as well as the value of your property. It may also prove to be to your advantage if you ever wish to sell your home, apply for a home equity loan, or make a claim against your homeowner's insurance.

Permits are required for new buildings, remodeling, additions to your home, and improvements to your property. For example, a new room or patio roof, a factory built or masonry fireplace, a swimming pool or spa all require a permit. So does a landscape irrigation system, a new air conditioning unit, a new furnace or water heater, or any other change or repair made to an existing electrical, mechanical, or plumbing system.

A permit is required to enclose a carport to convert it into a garage. A permit is also required for a storage shed, playhouse, or gazebo if it has over 200 square feet of roof area, or it is attached to the house.

If you are not sure whether you need a permit or not, You can call the Development Services Center at 623-333-4004 and find out before beginning work on your project.

Work that is started without a permit will result in the charge of an investigation Fee in addition to the permit fee. Worse, if the work does not meet the codes, it would have to be removed or rebuilt, which could prove even more costly. It is our goal in the City of Avondale to help you do it right the first time so that you will gain the most from your efforts.

If you have any questions or you think we can help you, please feel free to call us or visit us, between 7:00 a.m. and 6:00 p.m., Monday through Thursday, except legal holidays.

HOW TO OBTAIN A BUILDING PERMIT

The home owner or a licensed contractor may apply to the City of Avondale for a building permit. The applicant must provide enough information to describe the project fully and clearly.

In some cases, this can be done in a few words, such as, “Upgrade existing electric service form 100 to 200 Amps,” or “Replace ¾ inch copper water service line.”

However, in most cases construction drawings will be required. For commercial projects these are often done by an architect. For your home improvement project you may do them yourself, or have a friend or family member do them for you, provided that the drawings are accurate, neat, and complete.

You may hire an architect or drafting service if you choose. Of course, they will charge you for their services, but you may find that it is worth the cost if they save you time, or save you money, by knowing the best way to achieve what you want, and the most economical way to do it. If you use a contractor, you will also find that some of them will provide the drawings and include the cost in their total bid for the construction work. Whatever you may choose, the drawings must show all the proposed work fully and clearly.

Your drawings will be reviewed to see that they comply with Zoning and Building Codes. You may be asked to make corrections or to provide more information. Two copies of each drawing are required. They may be blue prints or Xerox copies. When the drawings are approved and the permit is issued, you will be given one set of drawings to keep on the jobsite. The other set will be kept by the City until the job is finished and in accordance with the state required retention period.

The fee for a building permit depends on the type and size of your project. For many simple projects you will pay a minimum flat fee. For room additions, patio covers, and garages, the fee will be based on the square footage and valuation. You may call and ask the Development Services Department for an estimated permit fee.

CONSTRUCTION DRAWINGS

NOTE: All drawings in this booklet are conceptual examples only and do not cover all code requirements.

Depending on your project, you may need some or all of the following:

Site Plan	Elevations
Cross Section	Details
Floor Plan	Electrical Plans
Roof Framing Plan	Plumbing Isometric
Floor Framing Plan	Gas Pipe Isometric
Foundation Plan	Energy Conservation Plan

You may also be asked to provide information such as:

Engineered Truss Design
Engineering Calculations
Electrical Service One-Line Diagram
Electrical Load Calculation
Plumbing Fixture Count
ICBO Report Numbers for products or equipment
Septic System Permit from the County Health Department

Preparing a complete set of accurate plans will benefit you in several ways:

- It will help you to picture how the parts of your building will fit together, and to plan which items must be done before other items. It will prevent unpleasant surprises and last minute changes during construction.

- It will allow us to do a faster and more thorough plan review, to provide you with better service by anticipating code problems in advance, and to help you find solutions.

- It will give your contractor, if you use one, clear instructions as to what materials to use and what the finished result should be. It will protect you from misunderstandings and disputes.

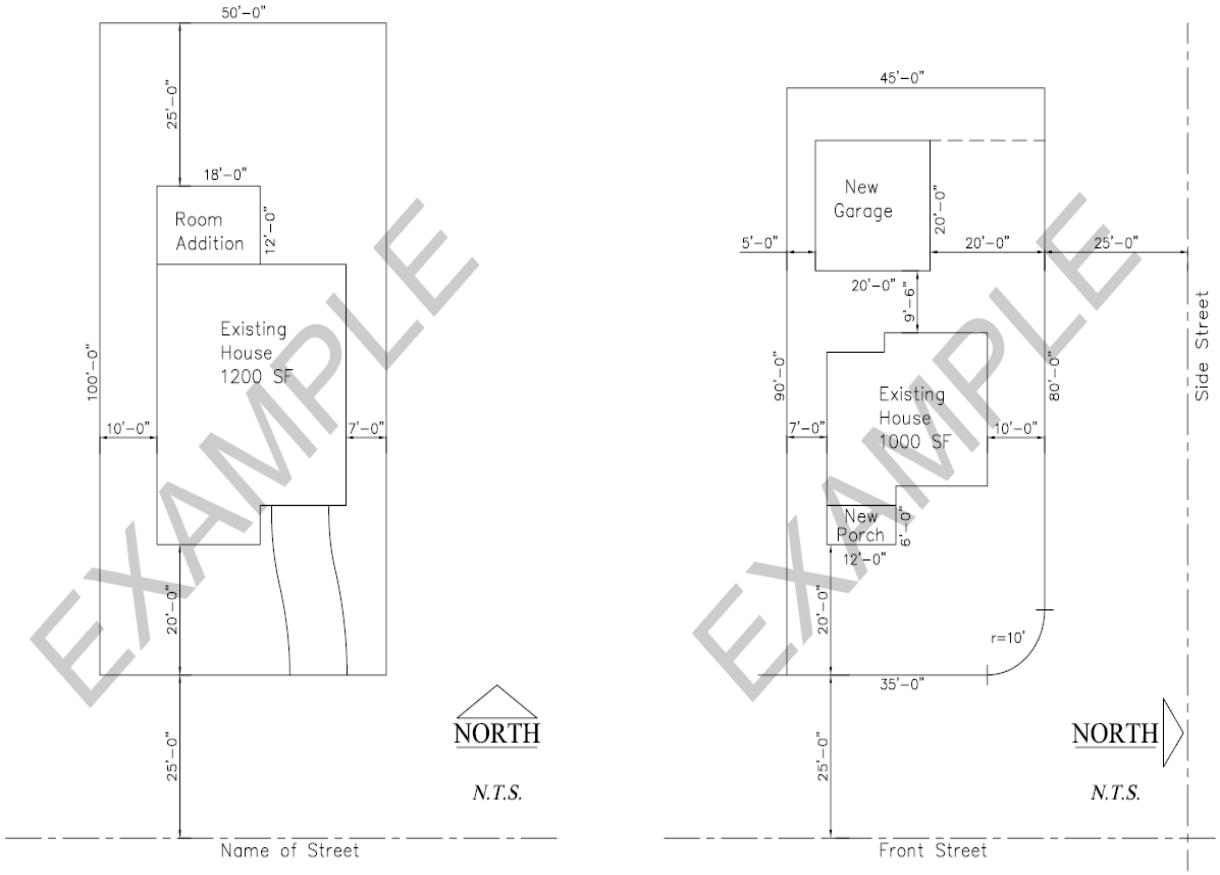
- It will give you a written and graphic record of the job to keep on file if there are future problems, as well as plans that will be useful if you decide to do another project in the future.

SITE PLAN

You will need a site plan any time you build a new building, you add roof area to an existing one, or you enclose space under an existing roof.

A site plan is a bird's eye view of the whole property. Show the property lines, streets and alleys, and the outline of all new and existing buildings. Show the closest distance between buildings, and the closest distance from each building to each property line. State the square footage of all new and existing buildings including patio roofs, garages, and carports.

TYPICAL SITE PLAN

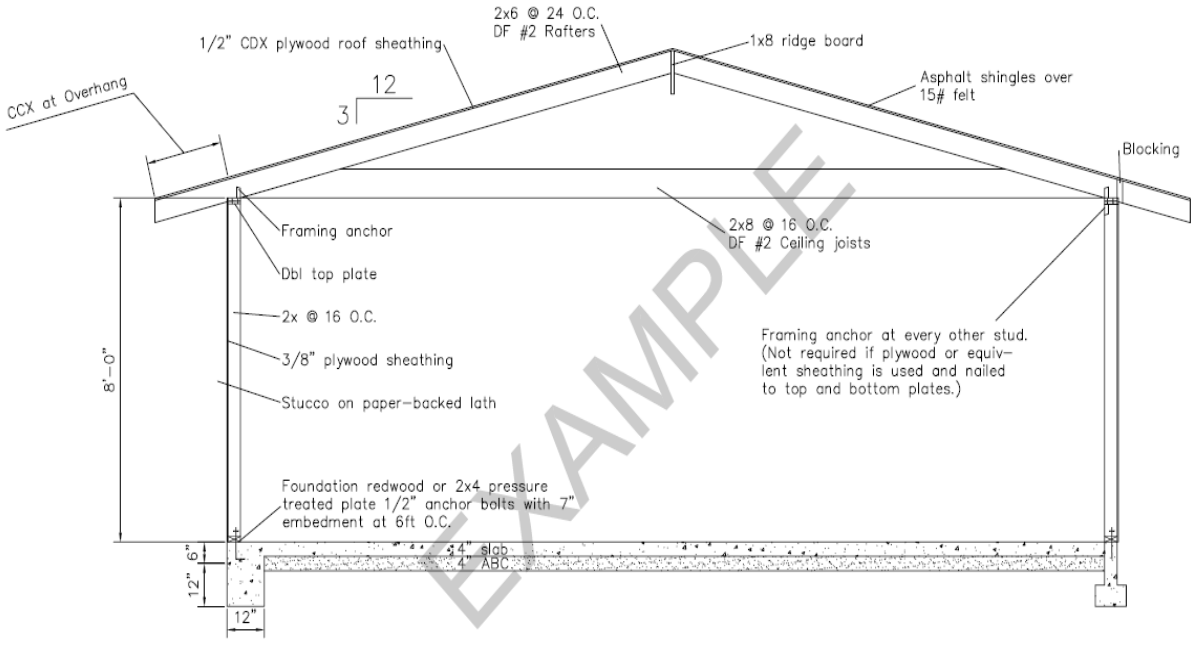


CROSS SECTION

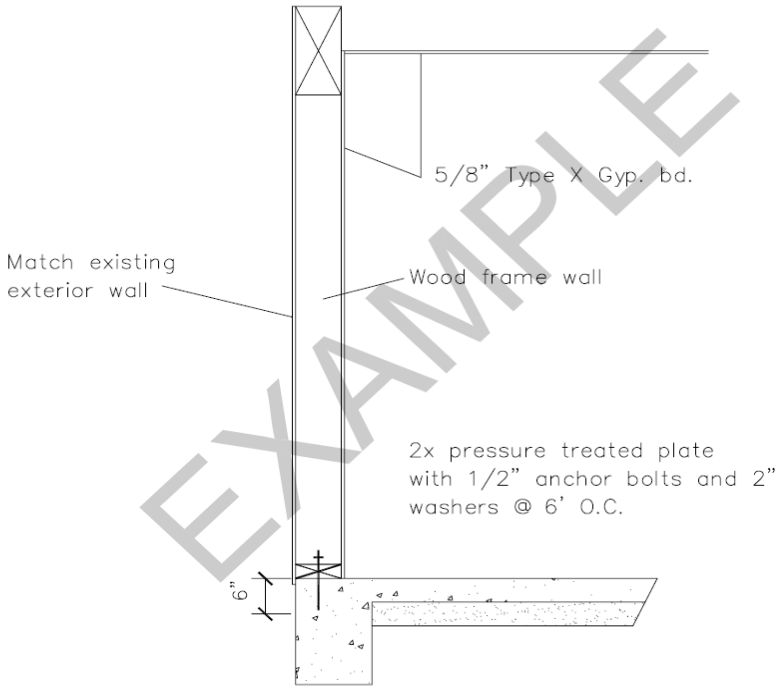
This is an important drawing and the one that you will always need to build any kind of building. It is the drawing that best shows how the building will be constructed. To draw a cross section, imagine cutting a slice right through the building so you can see inside it. Show the concrete footings under the ground, the walls, the beams and columns, and the roof rafters or trusses. Show the stud inside a frame wall, and the rebar inside a block wall. Show the plywood sheathing and the type of roofing. Label all the parts and materials, and show their sizes or dimensions. Show how the parts will be put together with metal connectors, bolts, or nails.

The sizes of rafters, joists, and beams will be dependant on the type of lumber you use. For example, suppose you build a patio roof 12 feet wide. Using plain pine lumber, you would need 2 X 8's @ 24" o.c. or 2 X 6's @ 16" o.c. Using Douglas Fir #2 you could use 2 X 6's @ 16" o.c. The stronger wood is more expensive, but you may not need as many or as big a size. So state the species and grade on the plans, and when you shop for your lumber look for the grade stamp on the end of each piece. The inspector will look for it on the job.

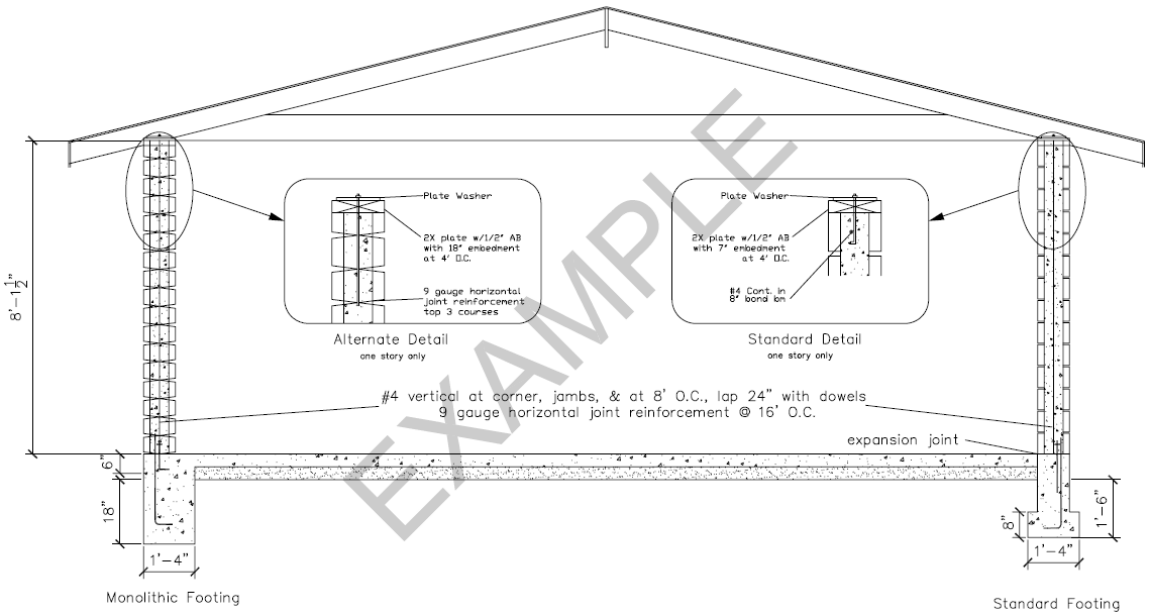
TYPICAL WOOD FRAME SECTION



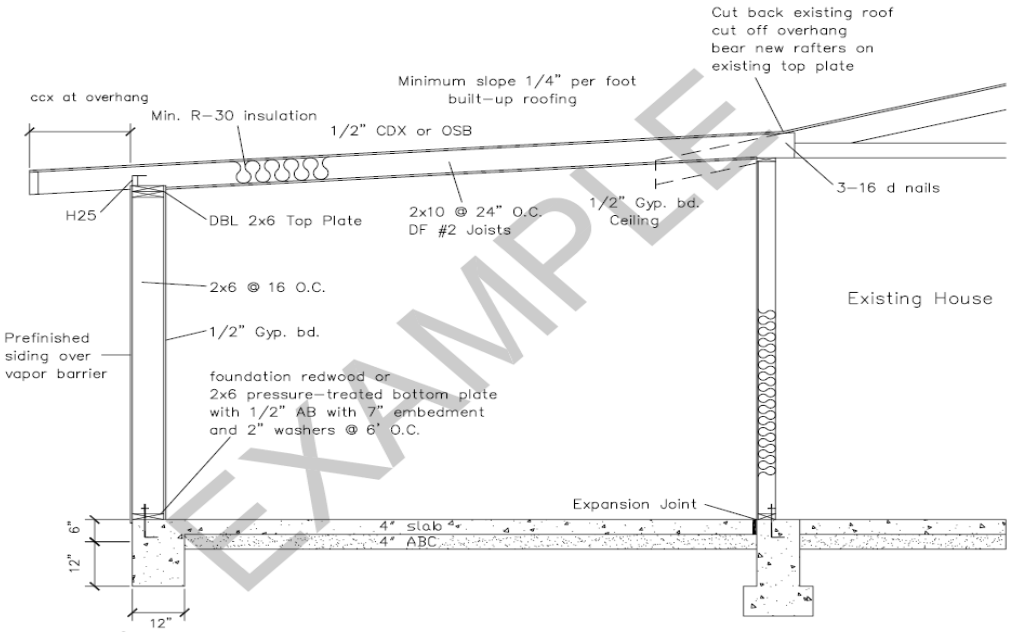
CARPORT TO GARAGE ENCLOSURE



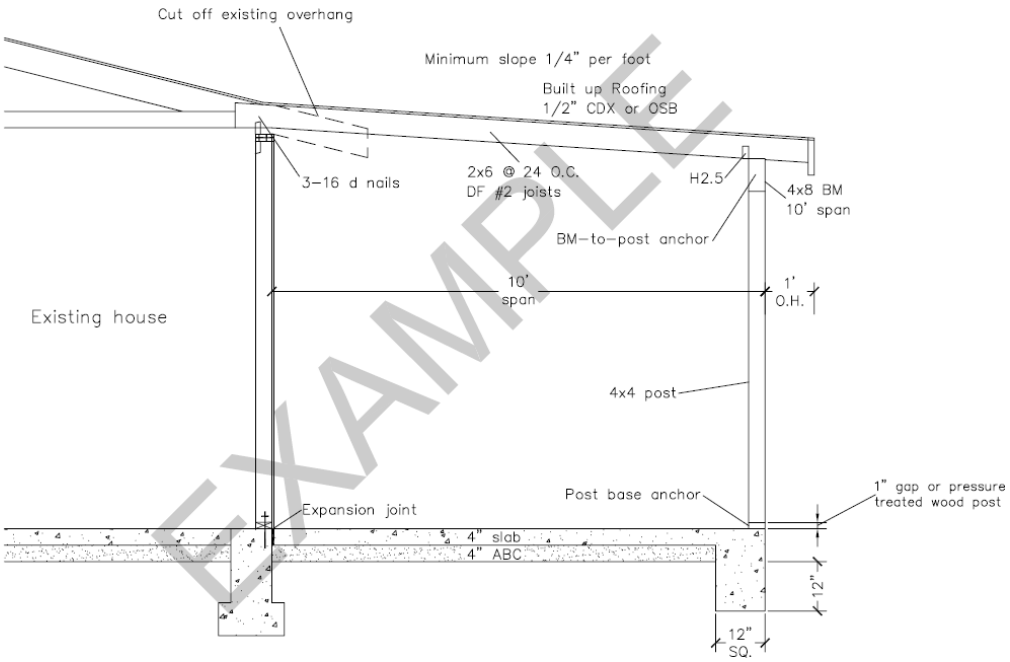
TYPICAL CONRETE BLOCK SECTION



ROOM ADDITION WITH MONOLITHIC FOOTING



PATIO ADDITION



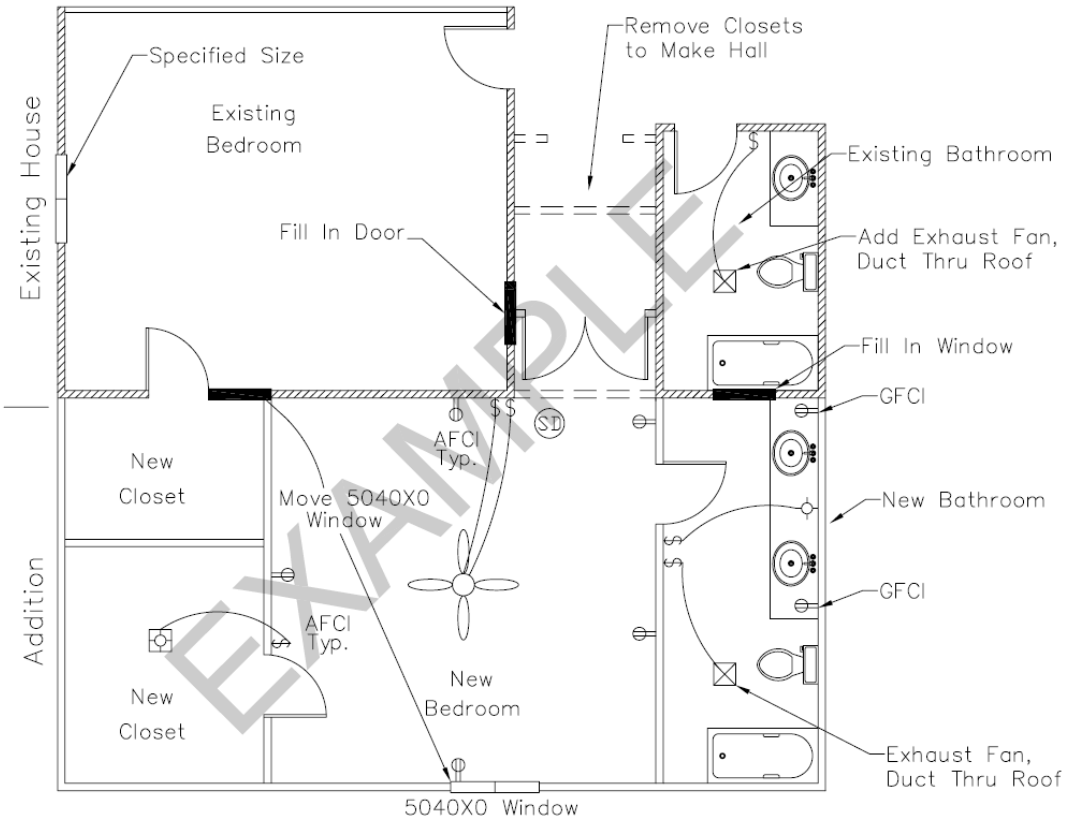
FLOOR PLAN

You will need a floor plan if you add a room to your home, or if you change the inside of the house by taking out or adding any walls. You will also need a floor plan for a garage, storage, or workshop building.

A floor plan is the view of the inside of a building as if you took off the roof, and you were looking down. Show the size and use of every room. Show the size and type of all doors and windows. Show the plumbing fixtures, water heater, furnace, appliances, and built-in cabinets. Show locations of electric switches, lights, fans, and receptacles with symbols as shown.

Depending on your project, your floor plan may need to show the whole house, or just a part of it. It must show any part of the house that will be affected. This includes an existing room if a new room will be attached to it.

FLOOR PLAN



LIGHT & VENTILATION

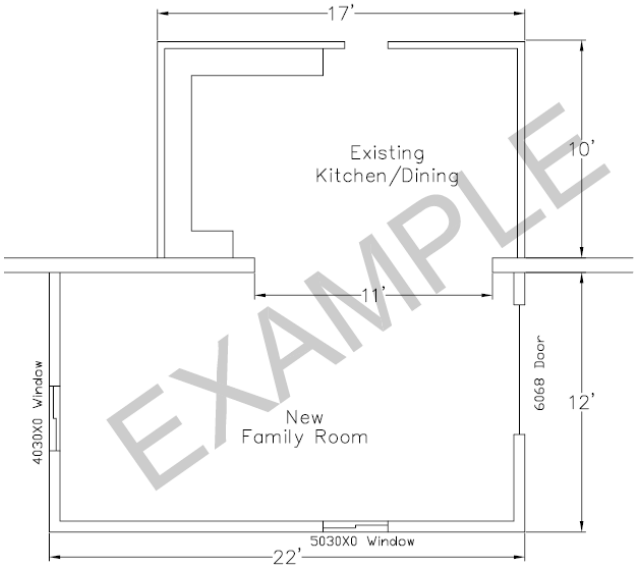
The Building Code requires that every room in your home have natural light and ventilation. The total windows must equal at least eight percent of the floor area of the room, and at least half of the eight percent shall be operable. Bath rooms and laundry rooms do not need windows, but must have fans vented to the outdoors if they do not have windows.

If you are planning to add a room or enclose a patio, your floor plan must show that it will meet these requirements. It is usually easy to do this for the new room because you will want to put in doors and windows anyway, but you must be careful not to block the light and ventilation to existing rooms.

If your new room will enclose the outside door or window of an existing room, then you may have to add another door or window to the existing room. If there is no outside wall where you could do this, you may put a skylight in the roof instead. If you remove at least half the wall between the new room and the existing room, then you can call it all one room, and figure the window area for the total floor area as a whole.

As you can see, there are different ways to meet this code. If you will draw a plan to scale, with room dimensions, and bring it in to our office, a Development Services Representative will be glad to go over it with you, and explain how it works.

LIGHT & VENTILATION



Wall between rooms
=17' x 8' = 136 SF
Opening required
$\frac{1}{2}$ of 136 = 68 SF
Opening provided
=11' x 6'–8" = 73 SF

Area of rooms =
10' x 17' = 170 SF
12' x 22' = 264 SF
434 SF

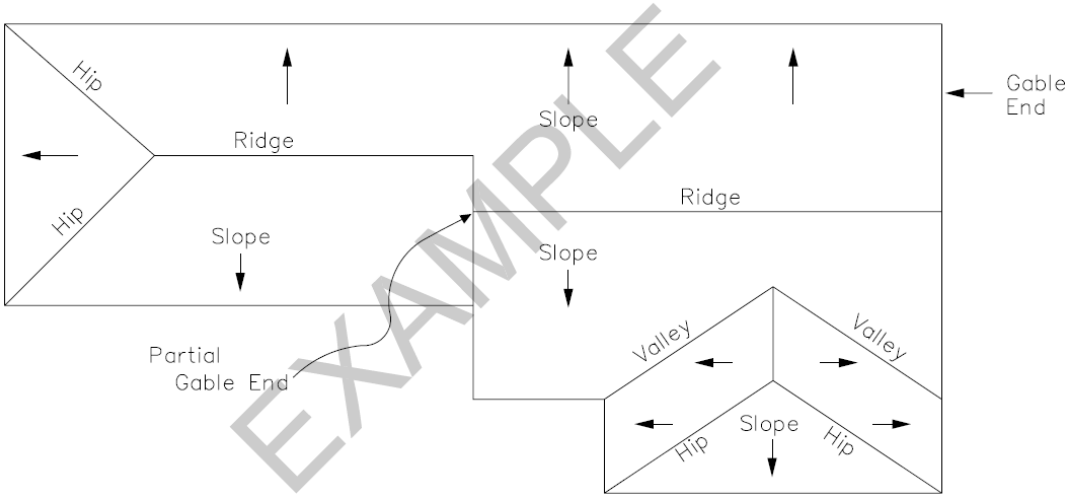
Window area required
$\frac{1}{8}$ of 434 = 54.3 SF

Window area provided
4' x 3' =12 SF
5' x 3' =15 SF
6' x 6'–8" =40 SF
67 SF

ROOF PLAN

If your project is a simple rectangular building, like a shed or a detached garage, or if it is a small room addition with a roof that is easy to attach to the existing house roof, then you will probably not need a roof plan at all. The cross section will be enough to show how the roof will be constructed. However, if the addition and the existing roof will be joined at different angles, heights, or slopes; if crickets will be needed to drain rainwater; if it is hard to envision how the roof will look, then drawing a roof plan will prove to be a great help to you. A roof plan is a bird's eye view of the roof. It can help you to figure out the best way to slope each part of the roof, and where the valleys, ridges, and hips will be.

ROOF PLAN



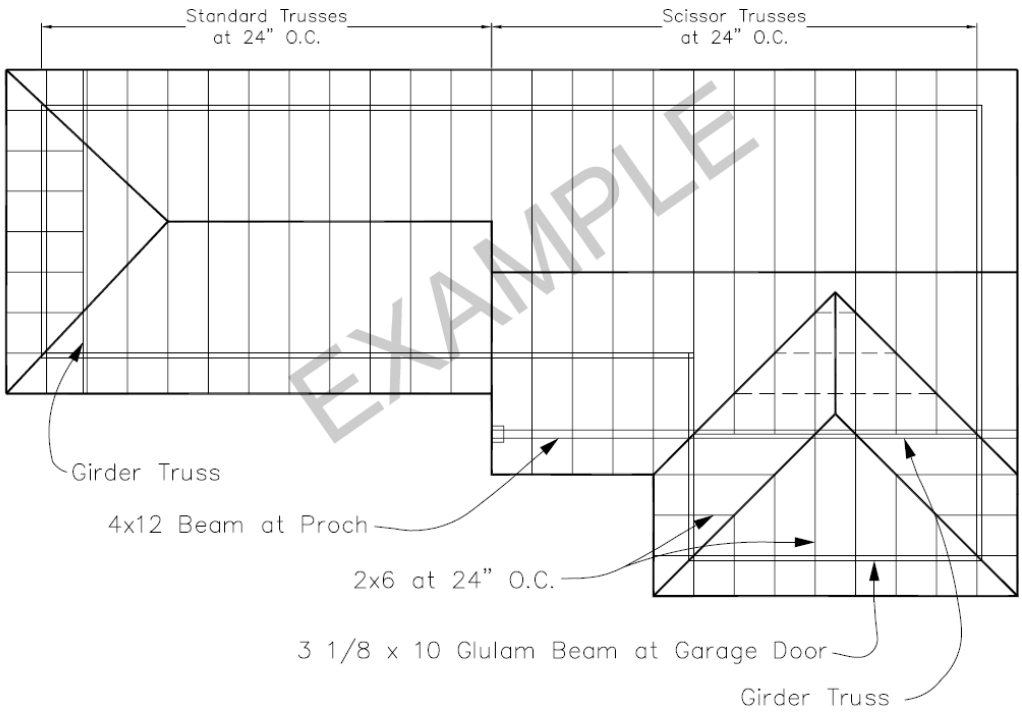
ROOF FRAMING PLAN

A roof framing plan is like a roof plan except that instead of showing the surface of the roof, it shows the structure under the surface. It shows the rafters, joists, trusses, and beams.

If your roof requires several beams; if one beam is supported by another; if trusses are supported by a girder truss; if there is anything about the structure of the roof that is not shown by a cross section, then you will probably need a roof framing plan. A Development Services Representative can advise you on this.

If you plan to use trusses, you must provide the manufacturer's layout sheet and diagram of each size and type of truss, sealed and dated by an engineer registered in Arizona, before a permit can be issued.

ROOF FRAMING PLAN



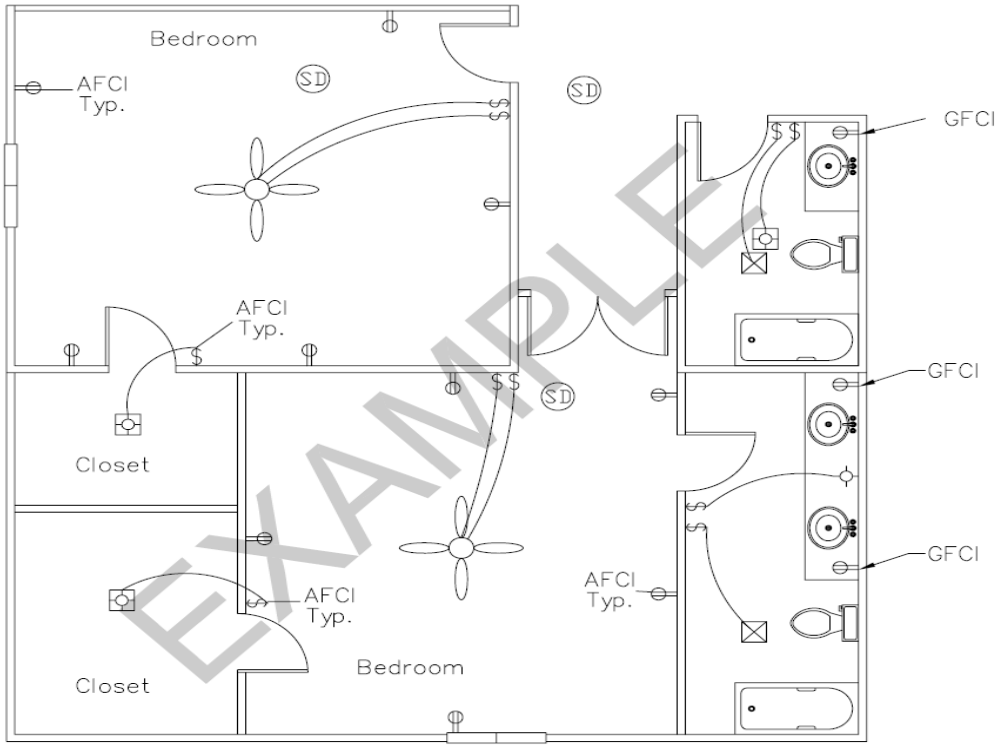
ELECTRIC PLAN

Locate electrical outlets, lights, and switches on your Floor Plan as shown in the example. Some of the most common Code requirements are given below. The plan reviewer will help you with these and other requirements more fully after you submit your plans.

A living room, dining room, family room, or bedroom must have outlets evenly spaced around the room so that a six-foot cord along the walls can reach an outlet without crossing a doorway. Every wall two feet wide or more must have at least one outlet. Each room must have a light that is controlled by a switch or an outlet that is controlled by a switch. Each exterior door must have an exterior light that is controlled by a switch beside the door.

Kitchen counters must have outlets for small appliances, spaced at a maximum of 48" o.c., and on their own twenty ampere circuits. All outlets within six feet of a sink, in bathrooms, basements, and outdoors require a GFCI or "Ground Fault Circuit Interrupter." A garage attached to the house must also have at least one GFCI outlet. If you enclose a carport to convert it to a garage, you may find you have to add a GFCI outlet. If you add a bedroom Arc Fault Protection and a smoke detector will be required.

ELECTRICAL PLAN



ELECTRIC SERVICE & LOAD CALCULATION

Whenever you plan a room addition, or add any new equipment to your home that will use electrical power, you will want to check the size of your electrical service to make sure it will be able to supply that power, as well as all the existing loads. You will need the following information to perform the calculation and determine if you must upgrade the electrical service in order to make the improvements you want.

To do a Load Calculation for your house you must know the total "livable" square footage, the number of kitchen small appliance circuits, and the full-load amps of the air conditioning, and any other major equipment. Generate a list of standard appliances like the range, cloths dryer, and water heater. If you cannot find the nameplate ratings, we can provide typical values for those. Look at the main breaker in your panel to find the size of your existing service. Typical sizes are 60, 100, 150, or 200 Amps.

The calculation provided below is for **example only**; individual results will vary depending on square feet, appliance circuits, nameplate ratings, and heating and cooling loads.

General Load	Volt Amperes
2000SF X 3VA	6000 VA
2-20 Amp Appliance Circuits @ 1500VA each	3000 VA
Laundry Circuit	1500 VA
Range(at name plate rating)	12000 VA
Water Heater	4500 VA
Dishwasher	1200 VA
Washer/Dryer	5000 VA
	Total General Load 27200 VA
First 10000VA @ 100% Remainder @ 40%	10000 VA (17200x.4) 6880 VA
	Subtotal general load 16880 VA
Air Conditioning (42A x 240 V / 1000)	10080 VA
Calculated Load for service	Total 26960 VA (26960 VA/240 V) = 113 A (Service Rating)

ELECTRICAL PANEL SCHEDULE & CIRCUITS

Electrical fires can be caused by overloading existing circuits. If you add new loads to your existing service, you may need to add new circuits for them. Provide a panel schedule showing the size of each circuit breaker in amps, and what it controls. It is also helpful to show the wire sizes. As you will see in the example, the schedule looks like a diagram of the panel.

PANEL SCHEDULE

120/240V

Single Phase

Service 10,000 AIC

200 A Main Breaker

	Wire Type & Size	Circuit Breaker Number	Circuit Breaker Amps	Circuit Protected	Circuit Protected	Circuit Breaker Amps	Circuit Breaker Number	Wire Type & Size
	Cu #14	1	15	General Lighting & Receptacles	Air	2 / 30	2	AL #8 or Cu #10
	Cu #14	3	15		Conditioner		4	
	Cu #14	5	15		Range	2 / 50	6	AL #8 or Cu #10
	Cu #12	7	20				8	
	Cu #12	9	20		Water	2 / 30	10	
	Cu #12	11	20		Heater		12	
	Cu #12	13	20		Cloths	2 / 30	14	
*	Cu #14	15	15		Druer		16	
*	Cu #12	17	20	Microwave Oven	Spare		18	
		19		Spare	Spare		20	

* New Circuits this permit

SEWER OR SEPTIC SYSTEM

If your home is on a private septic system and City sewer is available, upgrades to the system, such as replacement of, will not be permitted. You will need to connect to the City sewer. The septic tank or cesspool will need to be cleaned out and filled as required by the Maricopa County Health Department. No Building Permit for a bedroom addition or a plumbing improvement will be issued without the Plumbing and Right-of-Way Permits for the sewer tap. If your home is on a private sewage system, and the City sewer is not available, you must resubmit your Septic Permit to the Maricopa County Health Department before you can obtain a Building Permit to add a bedroom to your home. It may surprise you to learn that you do not need to update the Septic Permit to add a bathroom, but you do to add a bedroom. This is because it is based on the probable number of people using the system, not the number of fixtures available for them to use.

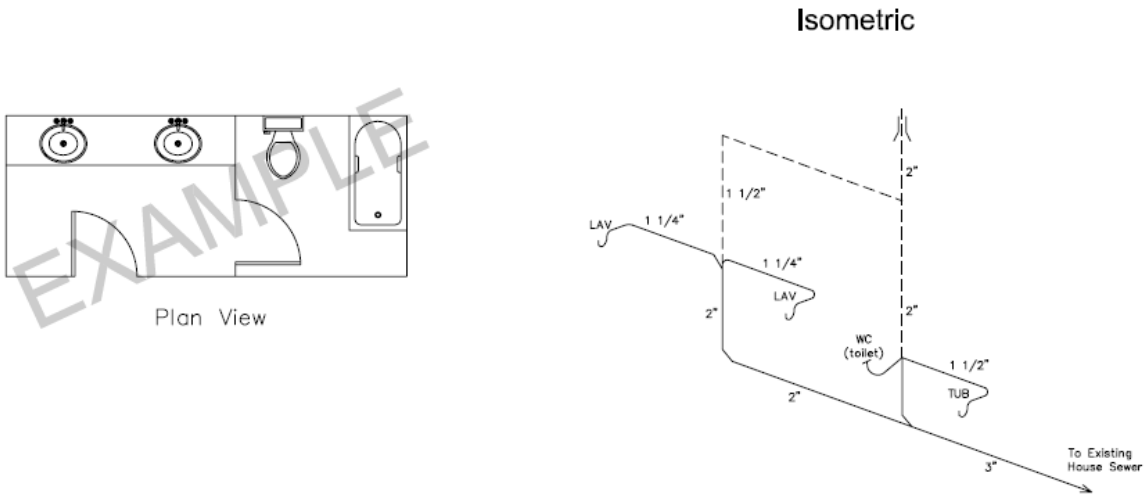
BATHROOM AND OTHER PLUMBING ADDITIONS

Whenever you add more fixtures to a plumbing system, you should check the size of your meter and yard piping to see if they are large enough to supply the increased demand. Ask the Development Services Representative for a residential water meter worksheet. Fill in the number of each type of fixture on the system, both existing and new, and the total Developed Length of the water line. This is the longest continuous path of piping from the meter to the farthest fixture including backyard hose bibs and fixtures in an accessory building. From this information we can advise you if you would have to upgrade your meter or your water line in order to make the improvements you want.

PLUMBING ISOMETRIC

If you are adding fixtures to your plumbing system, include in your plans a Drain, Waste, and Vent Isometric. This is a 3-D "stick picture" of the piping. Show it exactly as it will be installed, with all the bends and branches required to fit it inside the walls, floor, and roof. Show the traps, the trap arms, and all vertical and horizontal piping. Label each trap with the name of its fixture, and label the size of each section of pipe. The Development Services Representative can help you with the minimum sizes required by the code. Show all the new piping and how it will tie into the existing system. If you are contracting this part of your project, your plumber may provide you with this drawing. You need only the DWV Isometric, not an isometric of the water supply.

PLUMBING ISOMETRIC



LOW FLOW FIXTURES

If you are adding or replacing any plumbing fixtures, you must install “Low Flow” fixtures under a State Statute designed to save water. Sinks, showers, and lavatories are limited to an average of three gallons of water per minute.

LANDSCAPE IRRIGATION

The purpose of a permit for landscape irrigation is to protect your drinking water supply from contamination. This is done by installing an approved anti-siphon/vacuum breaker assembly. This permit can be issued over the counter by providing minimal information as to type of vacuum breaker and location.

GAS TEST

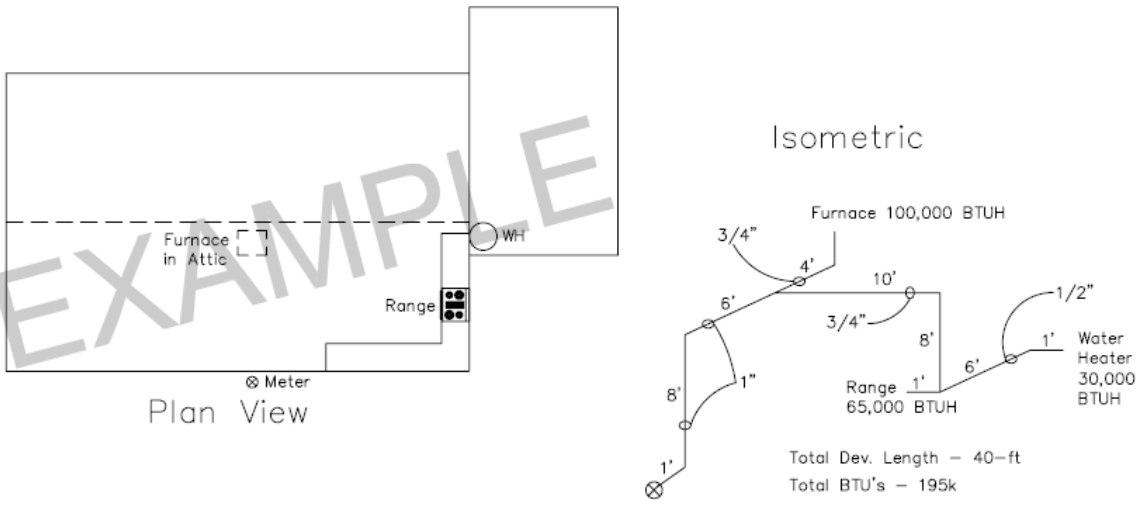
A “Gas Test” is really an Air Pressure Test of the gas supply system. It is required whenever you add or replace any gas piping. The Building Inspector does not do the test for you. You or your contractor must provide the equipment and set up the test prior to the inspection. Then the Building Inspector will observe that the test gauge is holding the required pressure. For more information ask for a separate sheet on “Gas Test Requirements”.

GAS ISOMETRIC

You will need a Gas Isometric drawing if you are adding a gas burning appliance to your home, if you are replacing one with a larger unit than the existing one (measured in BTU’s per hour), or if you are re-piping the entire gas system. You may not need a Gas Isometric if you are replacing an existing gas appliance with one the same size or smaller, or replacing a defective pipe or fitting with the same size.

A Gas Isometric is similar to a Plumbing Isometric. It is a 3-D stick picture of the gas supply piping system. Show it exactly as it will be installed with all the bends and branches required to fit it inside the walls, floor, and roof. Label the meter, each appliance, and the BTU rating of the appliance. Label the length and size of each section of pipe. The entire system, both new and existing, must be shown in order to determine the minimum pipe sizes. The Development Services Representative can help you with the pipe sizes required by the Code.

GAS ISOMETRIC



SWIMMING POOLS & SPAS

Most people have their pool or spa built by an established company. The company will obtain the permit and request inspections as part of its usual service. However, as on any other project, you may choose to be your own general contractor, obtain the permit yourself, and even do all, or part, of the work yourself, provided that you own the property and live there as well. To obtain a building permit for an in-ground pool or spa, you must provide structural plans sealed by a registered engineer. Above-ground pools and spa permits do not require engineering.

All pool and spa permits require a Site Plan similar to that required for a building project. Dimension the closest distance from the edge of the water to each building and to each property line. Show the depth at each end and at the deepest point, as well as at the closest point to each building, including an open patio or gazebo. Show the location of the filtering equipment, the electrical service for the home, and any subpanel installed for the pool. Show any overhead or underground electrical lines in the yard. Indicate all electrical receptacles within 20 feet and lights and switches within five feet of the water's edge.

When the permit is issued a handout is provided with all the requirements for the pool barriers. This information can also be viewed and printed from our website. If after you read through the barrier requirements and you need further explanation, you should contact the Development Services Center at (623) 333-4004 for clarification.

If a natural gas or propane heater will be installed for the pool or spa, show its location on the Site Plan, the length and size of the piping, and the rating of the heater in BTU's per hour. In addition to the building permit, propane tanks also require a Fire Department permit. Show the location and size of the tanks on the Site Plan, the closest distance from the tanks to the heater, to any electrical equipment, such as a ground-mounted air-conditioner, and to any ground-floor or basement windows. The Fire Permit is obtained at the same place as the building permit.

You will have to have your licensed propane installer obtain the permit for the tank and lines rather than including them with your pool or spa permit.

"NOW THAT YOU HAVE YOUR PERMIT"

Congratulations! You have a City of Avondale building permit. Now you may start construction of your project. Please post the green permit form on the front of your home where it will be seen from the street, and where the inspector can get access to it. It is recommended that upon completion of the project, you file the permit in a permanent place, for example, with the deed and the insurance policy for your home, in a safe-deposit box.

Your permit will remain valid for 180 days from the date it was issued. Once you start work and pass your first inspection, your permit will remain valid as long as you continue to work and to call for inspections. If you stop work on your project for more than 180 days, your permit will expire. So, if you run into unexpected problems with your project, or problems that interfere with your project, such as serious illness, or loss of income, please let us know. Your permit may be extended free of charge, or renewed for a fee, depending on the circumstances. However, if you let more than a year pass by without any contact with us, then a new permit will be required. New plans must be submitted, and the full fees paid as if it were a new project.