STONERIDGE
HOMES

Caring For Your New Home

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I. Introduction

Stoneridge Homes (herein after referenced as “Builder”) has constructed your home using high quality materials and the efforts of experienced contractors under the supervision of our construction managers, coupled with the administrative support of our office personnel. Although your home is constructed from detailed plans and specifications, no two homes are identical. Each home is uniquely built and over time each one behaves differently.

The quality materials and workmanship that have been used in custom building your new home will still require day-to-day care by you from the first day you move in. Regular homeowner maintenance is necessary in order to provide a quality home that will provide years of comfort and satisfaction. This guide was assembled in order to assist you in understanding the proper warranty procedures as well as homeowner use and maintenance guidelines.

II. Home Warranty

We strive to build a quality home and we offer an excellent warranty program. In support of this valuable commitment, we extend to you a detailed Limited Warranty.

At the signing of your new home's contract, you received a copy of the Limited Warranty Agreement sample booklet for your new home. We suggest that you carefully read through this information as well as the service procedures that are discussed below. You should familiarize yourself with those items that are warrantable, non-warrantable and those items and that are considered to be the responsibility of you, the homeowner.

To comply with the terms of your warranty as well as for reasons of accuracy, all non-emergency items for which you request service must be reported in writing either by fax, mail, email, or submitting a service request on our website**. We will not accept reports of routine warranty items over the phone.** You have also been given a list of subcontractors to contact for non-emergency items.

Normal Warranty Procedures

Prior to submitting your Request for Service, read the Caring for Your Home section within this manual as well as your Limited Warranty Agreement.

Once an item of concern is determined to be warrantable, please fax, email or mail the Request for Service form to the fax number, email address or address listed below. The Construction Manager or Subcontractor will contact you after receipt of the Request for Service to schedule an appointment. We must be able to have access to your home during the hours of 8:00 a.m. and 4:00 p.m., Mondaythrough Friday.

Fax number: (256) 852-0338

Website: www.stoneridgehomesinc.com

Mailing address: Stoneridge Homes, Inc.
Attention: Warranty Department
105 Von Braun Drive
Huntsville, AL 35806

It is important to be sure to complete the entire Request for Service form before submitting to our office. The Builder will not consider any items submitted of a cosmetic nature after the New Home Presentation.

Emergency Warranty Procedures

Emergency, as defined by the Limited Warranty Agreement, includes:
Total loss of heat
Total loss of electricity
Plumbing leak that requires the entire water supply to be shut off

Total sewage stoppage
Any situation that endangers the occupants or the home

For these emergency items, you may call the appropriate contractor directly.

*Note, if a service (gas, electricity, water) is out in an entire area, attention from the local utility company is needed. Trade contractors are unable to help you with such outages.

Access to Your Home

The Builder conducts inspections of interior warranty items only when an adult is available to accompany our representative and point out the items listed. Both our in-house service technicians and those of our contractors will likewise perform repairs only when an adult is available to admit them into your home. An adult is considered to be 18 years of age or older, who has your authorization to admit service personnel and who is authorized to sign completed work orders.

We do not accept keys, nor will we permit our contractors to accept your key and work in your home without an adult present. While we recognize that this means processing warranty service items may take longer, we believe your peace of mind and security should be our first concern.

Completion Time

Regular review of outstanding work orders is part of our office routine. We strive to complete warranty work orders as quickly as possible unless you are unavailable for access. If a back-ordered part or similar circumstance causes a delay, we will let you know. Likewise, when weather conditions prevent the timely completion of exterior items, we track those items and follow up to ensure that they are addressed when conditions are right. This could mean a wait of several months.

Missed Appointments

Communication is an important factor to successful completion of warranty items. We strive to keep homeowners informed and to protect them from inconvenience. Our challenge in this regard is when unexpected events result in missed appointments.

If a contractor will be late, he or she should contact you as soon as the delay is recognized, offering you a choice of a later time that same day or offer you a new appointment time on a different date. If you miss an appointment, we appreciate being alerted as soon as you realize your schedule has changed. We can put work orders on "hold" for thirty (30) days and reactivate them when your schedule offers a better opportunity to arrange access to the home.

We Sometimes Say "No"

With a product as complex as a home, different viewpoints arise regarding what items are considered homeowner maintenance responsibilities and which are Builder warranty responsibilities. If you request warranty service on a maintenance item, we will explain to you the steps you should take to care for the item. We are available to answer your home-care questions during and after your warranty period. Providing normal maintenance for your home is *your* job.

Warranty Specimen Provided for Your Review

At the signing of your new home's contract, you received a copy of the 2-10 Home Buyers Warranty sample booklet and at closing; you received a signed Limited Warranty Agreement for your new home. We suggest that you carefully read through this information as well as the service procedures and guidelines discussed on the following pages. If you have any questions, please contact our warranty office.

Kitchen Appliances Warranties

Appliance warranties are generally for one (1) year from the date of your home closing. Please refer to the literature provided by the manufacturer for complete information. Appliances are warranted by the manufacturer; see Magnuson-Moss Warranty Act below.

Magnuson-Moss Warranty Act

The following items of equipment, if included in your new home, have been defined as "Consumer Products" covered by the Magnuson-Moss Warranty Act when sold as part of a home and therefore are excluded from the bonded Limited Warranty Agreement on your home issued by your Builder; these items are covered by manufacturers' and/or suppliers' warranty, if any:

Heating and Ventilation
Heat Pump
Exhaust Fan
Gas Furnace
Thermostat
Air Conditioning System

Mechanical/Electrical
Smoke Detector
Fire Alarm
Garage Door Opener
Light Fixtures/Chimes
Water Pump
Electric Meter
Water Meter
Gas Meter

Appliances
Refrigerator
Freezer
Trash Compactor
Range Oven
Oven Hood
Microwave
Dishwasher
Clothes Washer
Clothes Dryer
Ice Maker

Plumbing
Tub Systems
Garbage Disposal
Water Heater
Sump Pump

III. Caring for Your Home

Homeowner's Responsibility Introduction

The Builder has warranty responsibilities, but in general, IT IS NOW UP TO YOU TO TAKE OVER AND CARE FOR YOUR NEW HOME! Included is an extensive list of materials and workmanship standards, which cover many of the common concerns that typically come up in a new home. The purpose of this section is to let you know what our quality standard is for each item described and what we will do to remedy items, which do not meet our standards.

As an added service to our buyers, we have assembled a summary of common homeowner maintenance activities. We recognize that it would be impossible to anticipate and describe every attention that might be needed for good care of a home. But while this discussion is in no way claims to provide a complete listing of every action that might be needed, it does cover a great many important details. Additional information is included in the Limited Warranty Agreement. This expressed Limited Warranty and disclaimer of implied warranties is the only warranty the Builder gives in connection with the sale of your new home.

Periodic maintenance is necessary because of normal wear and tear, the inherent characteristics of the materials used in your home, and normal service required by the mechanical systems. Natural fluctuations in temperature and humidity also affect your home, resulting in maintenance items. By caring for your new home attentively from the first day, you insure not only your own enjoyment of it for years to come, but also that of future owners. Routine care, many times a minor maintenance attention, provided immediately saves you a more serious, time-consuming, and sometimes costly repair later. Note also that neglecting routine maintenance can void applicable limited warranty coverage on all or part of your home. By caring for your new home attentively, you ensure uninterrupted warranty coverage as well as your enjoyment of it for years to come. The care and attention provided by each homeowner contributes significantly to the overall desirability of the community.

In addition to reviewing the information that follows, be certain to read all the literature provided by the manufacturers of consumer products included with your new home. Although much of the information may be familiar to you, some points can be significantly different from homes you have had in the past. For your own further protection, activate specific manufacturer warranties by completing and mailing the registration cards included with their materials.

Air-Conditioning Systems

If your home has a central air-conditioning system, it should give you years of reliable comfort if properly maintained. The following information can help you get the maximum benefit from your central air conditioner. (Also see "Thermostats" under "Heating Systems.")

Your home's air conditioning is a closed system, which means that the interior air is continually recycled and cooled until the desired air temperature is reached. Warm outside air disrupts the system and makes cooling impossible. Therefore, you must keep all windows closed. The heat from the sun shining through windows with open drapes is intense enough to overcome the cooling effect of the air conditioning unit. Drapes must be closed on these windows.

Time is of paramount importance in your expectations of an air conditioning system. Unlike a light bulb, which reacts instantly when you turn on a switch, the air conditioning unit only begins a process when you set the thermostat.

For example, should you come home at 5:30 p.m. on a day when the temperature has reached 90 degrees, and then set your thermostat to 75 degrees, the air conditioning unit will begin cooling, but will take much longer to reach the desired temperature. During the whole day the sun has been heating not only the air in your home, but the walls, the carpet and the furniture. At 5:30 p.m. the air conditioning unit starts cooling the air, but the walls, carpet and furniture release heat and nullify this cooling. By the time the air conditioning unit has cooled the walls, carpet and furniture; you may well have lost patience.

If evening cooling is a primary goal, you should set the air conditioning at a moderate temperature in the morning while your home is cooler, allowing the unit to maintain the cooler temperature through the day. This temperature setting may then be lowered slightly when you arrive home with better results. For example, setting the thermostat at 60 degrees will NOT cool your home any faster and can result in the unit "freezing up" and not performing at all. Extended use under these conditions can damage the unit. You will find it to your advantage to adjust the cooling vents to maximize airflow to occupied parts of your home.

Registers—The registers throughout your home help to regulate the flow of air and to maintain the desired temperature. By opening and closing the registers and dampers, you can regulate the amount of cool air that enters a room. Carefully adjusted dampers will work with the thermostat to maintain the temperature of your home. Closing registers and doors to rooms not in use is a good way to reduce cooling costs. If you have a combined cooling and heating system, the same registers and dampers will be used to regulate the flow of the heat to the rooms.

In addition to the air outlets, your home will have one or more air return registers. Neither these nor the other registers should ever be obstructed by furniture, drapes, or other objects.

Filters—Most central air conditioners have an air filter to help clean the air in your home. The instruction manual for your cooling system will tell you the location of the filter and how to clean or replace it. (See also "Heating Systems.")

Annual Inspection—Like a heating system, a central air-conditioning system should be checked and cleaned periodically by a professional. See your system's instruction manual for the frequency of this care.

Appliances

Your new electric or gas appliances come with instruction manuals and other documents. Read all instruction literature carefully and fill out and mail any documents necessary to record warranties. Keep a list of authorized service agencies with each instruction manual.

If an electric appliance fails to operate, be sure it is plugged in before you request for service. If the appliance is separately wired, be sure the circuit breaker is still on. (See "Circuit Breakers.")

If a gas appliance with a standing pilot light fails to work, check to see if the pilot light is lit. Note that many gas appliances now use electric ignitions. If you suspect a gas leak, turn off the main gas valve near the meter and call the gas company immediately. **Warning:** Do not light matches, smoke cigarettes, make phone calls, or turn lights on or off in the vicinity of the suspected leak.

Attics

Attics, or spaces immediately below roofs, vary in size from crawl spaces to areas large enough to be converted in extra rooms.

Ventilation—Attic ventilation is required by the Uniform Building Code and therefore cannot be omitted. Occasionally, depending on the force and direction of the wind, rain or snow will infiltrate through these vents and cause spotting on the ceiling. The Builder is not responsible for such weather damage and will not make repairs in these instances.

Storage—Many homes have attic space, which can be used for storage. However, some homes are now built with roof trusses and do not have usable storage space in the attic. If you use your attic for storage, be careful not to put too much weight on your attic floor, which protects delicate insulation and may not be as strong as the floors in the living areas of your home. Attics are susceptible to extremes of heat and cold because attic walls usually are not insulated. Material stored in attics should not be combustible or perishable under these extreme temperatures.

Insulation—Your home has been constructed to be energy efficient. Be certain that materials stored in the attic do not compress the insulation because compressed insulation is less effective. This is true of both blown cellulose and traditional fiberglass insulation. Occasionally, the insulation on the attic floor may be out of place and leave gaps or block the path of attic ventilation. If either of these situations occurs, return the insulation to its proper location. Protect your skin, eyes, nose, and mouth if you will be handling fiberglass insulation. The attic access cover may have insulation attached to the topside. It should also remain securely in place so that less heat is lost through the access hole.

Louvers—Your attic may have louvered openings to allow warm, moist air to escape. Louvered openings should remain unobstructed at all times. If they are closed, harmful quantities of moisture may accumulate. However, generally louvers are non-functional and decorative only.

Bathtubs, Sinks, and Showers

Bathtubs, sinks, and showers are made of a variety of materials. Bathtubs are most frequently made of vitreous china, porcelain enamel on cast iron or steel or fiberglass-reinforced plastic. Bathroom sinks are usually made of vitreous china, of porcelain enamel on cast iron or steel, or of marble resin. Showers are most frequently made of ceramic tile, marble resin, fiberglass reinforced plastic, or molded plastic. Kitchen sinks are generally made of porcelain enamel or stainless steel. Laundry tubs or sinks are usually made of fiberglass or plastic.

To prolong the life of bathtubs and sinks, follow these precautions:

- Do not let food wastes stand in the sink. If you have a garbage disposal, dispose of food waste as it accumulates. If you do not have a disposal, put these wastes in an appropriate container.
- Do not use bathtubs or sinks to hold paint cans, trash, or tools when you are redecorating; cover bathroom fixtures when painting walls, ceilings, and woodwork.

- Do not wear shoes in bathtub for any reason. Shoes soles carry hundreds of gritty particles that can scratch the surface, regardless of the material.
- Do not use photographic or developing solutions in bathtubs or sinks. Developer stains are extremely difficult to remove. (See also "Drains," "Faucets," and "Plumbing.")

By observing these suggestions and using proper cleaning techniques, bathtubs and sinks will retain their luster for many years.

Vitreous China and Porcelain Enamel - The surfaces of these fixtures are smooth and glossy like a mirror and durable, but they are not indestructible. Carelessness causes chipping, scratches, and stains. A blow from a heavy or sharp object will chip the surface, and scraping or banging metal utensils will gradually scratch and dull the surface. Shiny new fixtures can also be dulled or stained within a short time through improper or excessive use of strong abrasive cleansers. Most household cleaners are mildly abrasive but are safe if used with plenty of water. A nonabrasive cleaner is safer. If you prefer a dry material, baking soda is nonabrasive.

Stainless Steel—Stainless steel fixtures generally resist staining and require a thorough scrubbing only occasionally. To clean, use only a mild cleanser. Do not use steel wool. Dry any water or other liquids from the sink to prevent rust.

Plastic and Other Substances—A nonabrasive cleaner usually works well with plastic and other substances, but you may ask your plumbing contractor to recommend a good cleaner for the particular material in question. Special commercial cleansers are also available. You can apply a wax or other surface protector to make cleaning easier and keep the units glossy.

Glass Shower Enclosures or Stalls—To clean glass shower enclosures, an ordinary dishwashing detergent (not soap) should do a good job. If hard water minerals have built up, use a household glass cleaner. In order to keep your glass looking clean, the enclosure should be wiped clean after every use. **Warning:** Use ample ventilation; avoid breathing the vapor from the spray, and wear rubber gloves.

Caulking—When the caulking around your bathtub or sink dries out or cracks, remove the old caulking and replace it. If you don't have a caulking gun, you can buy caulking material in applicator tubes or in disposable caulking guns from a home supply store. Fill the tub with water before caulking it. More is not necessarily better when it comes to caulking. (See also "Drains.")

Food Stains—For most food stains, use a mild solution of chlorine bleach (about 3 tablespoons to a quart of water), and rinse well. For stubborn stains, wait five minutes before rinsing. Do not use chlorine bleach on stainless steel. You can also use a paste of equal parts of cream of tartar, 6 percent hydrogen peroxide, and a household cleaner. Leave paste on the stain for 10 to 15 minutes before rinsing.

Cutting food on sink drain boards can leave scratches and nicks. The finish is then susceptible to stains, which become increasingly difficult to remove. (See "Countertops.")

Mildew—Even under sinks, mildew (another name for mold) can appear in areas of high humidity, such as bathrooms, and laundry rooms. You can take positive steps to reduce or eliminate the occurrence of mold growth by keeping the humidity in the home low. Vent clothes dryers to the outdoors. Ventilate rooms, particularly kitchens and bathrooms, by opening the windows,

using exhaust fans, or running the air-conditioner or a dehumidifier to remove excess moisture in the air. Promptly clean up spills, condensation, and other sources of moisture. Thoroughly dry any wet surfaces or material. Do not let piles of wet towels or clothing stand in the home. Regular vacuuming and cleaning will also help reduce spore levels. Should mold or mildew growth develop, scrub clean with a commercial tile cleaner.

Paint—Most oil-based paint will come off easily with paint remover. Newly spilled water-based paint will come off with a cloth dampened in liquid household cleaner. Small paint spots may be removed by scraping with a razor blade. To prevent surface damage, be sure the blade is slanted against the fixture. Remove any residue with a heavy-duty liquid household cleaner. Rinse thoroughly after using any of these.

Rust Stains—Rust stains occur when wet metal utensils are left on the surface of sinks or tubs. Steel wool soap pads also will rust and stain when wet and should be kept in an appropriate container. Rust stains are almost always permanent on fiberglass surfaces.

Blinds

Before raising blinds, be sure that the slats are in the open position. Blinds may be permanently damaged if they are raised when the slats are closed.

Cleaning—Dust will cause the finish of your blinds to deteriorate. Clean the slats often with a soft cloth or blind-cleaning tool (available in many home supply stores). Occasionally the blinds will need to be taken down and washed thoroughly. You or a professional should also periodically replace the tapes and cords.

Cabinets

Cabinets should operate properly under normal use. Doors, drawer fronts and handles should be level and even. Readily noticeable variations in wood grain and color are expected in all style selections. Replacements will not be made due to such variations. Only those chips, scratches and other flaws in surfaces, which are noted on the New Home Presentation form, will be repaired.

Kitchen and bathroom cabinets (or vanities) should never be cleaned with harsh abrasives. Use a detergent solution for cabinets made of laminate wood or metal. Clean wood cabinets as you would clean any other wood furniture unless they are plastic coated. It is best to ask the cabinet company what cleaners to use on your particular cabinets. Keep cabinet doors and drawers closed when not in use. Occasionally, check the cabinet hinges and screws to make sure they have not worked loose.

Carbon Monoxide Detectors

Your new home may be equipped with one or more carbon monoxide detectors. These devices resemble smoke detectors and are designed to sound an alarm if the level of carbon monoxide in the home reaches a harmful point. Carefully review the manufacture's instructions for the care and maintenance of your carbon monoxide detector. Some units are battery operated and some are wired into your home's electrical system. Either type should be tested frequently. If the alarm on your carbon monoxide detector sounds, treat the alarm as you would a smoke alarm and evacuate the house immediately and call the fire department.

Carpeting

Most carpeting has built-in stain resistance, which prevents spills and dirt from setting in the fibers. While most stain resistant treatment is fairly effective, it is not a substitute for prompt cleanup of household mishaps. Attaching furniture rests to the bottom of furniture legs distributes weight better and helps protect carpet. Your carpet should require little maintenance beyond regular vacuuming and occasional cleaning for tough stains or buildup of dirt in high traffic areas. If you plan to use carpet stain removal products from a supermarket or home supply store, read the manufacturer's instruction carefully before using. You may want to apply a small amount of cleaner to an out-of-view area of the carpet to test for color fading.

Although carpet seams will be visible, no gap or fraying is acceptable.

Edges of carpet along moldings and edges of stairs should be held firmly in place.

Cleaning, patching or replacement will correct stains or spots noted on the New Home Presentation form. The Builder will not be responsible for dye lot variations if replacements are made.

Ceilings

(See "Walls and Ceilings.")

Circuit Breakers

Circuit breakers and fuses protect the electrical wiring and equipment in your home from overloading. They are the safety valves of your home's electrical system. Every home should have a master circuit breaker. It generally is located near the smaller circuit breakers. When the master circuit breaker is tripped, the electricity to your home is cut off. Circuit breakers have three positions: on, off and tripped. When a circuit breaker trips, it must first be turned "off" before it can be turned "on". Switching the breaker directly from "tripped" to "on" should restore service.

Electrical Service Entrances—The electrical service entrance provides power to the service panel. It has been designed for the electrical needs of your home. Do not tamper with this cable.

Power Failures—In case of a complete power failure, first determine if your neighbors have power. If they do not, notify the power company. If the power failure affects only your home, check the master switch and circuit breakers. If one circuit breaker continues to trip, check to see if you have overloaded the circuit. If not, call an electrician. Failure to fix a short circuit could result in a fire. (See 'Electrical Receptacles.")

Condensation

(See "Foundations" and "Walls and Ceilings.")

Countertops

Countertops are generally heat-resistant and stain-resistant under normal use, but they should be protected from hot pots, pans, or baking dishes taken from an oven or stovetop. Do not cut food

directly on the countertop because the knife may dent or nick the surface. Countertops made of plastic-coated wood or metal may be cleaned with a detergent solution.

According to their manufactures, most stains wipe off of solid surface materials because they are not porous. Stubborn stains can be rubbed off with an abrasive household cleanser or fine sandpaper.

Because marble is easily stained or etched, it should be protected according to the manufacturer's instructions. Compatible sealing, polishing, and cleaning products are available from suppliers of marble and from some hardware stores.

Granite and solid surface materials do not stain easily and are less prone to scratching than marble. The maintenance of these countertops is minimal, outside of the occasional polishing should be sealed according to the instructions of the product used.

Any countertop or work surface made from unfinished wood will require special care. To protect it from spills, coat the surface (including the edges) lightly with olive oil, let the oil soak in for a few minutes, and then rub it dry with a soft lint less cloth. Several thin coats will provide better protection than one heavy coat. To remove onion, garlic, or other odors, rub the surface with a slice of citrus fruit (lemon, orange, etc.), sprinkle lightly with salt and wipe immediately with a soft cloth or paper towel. Clean it with a mild bleach solution once a week. Use a separate board for cutting raw meat. Rinse thoroughly and wipe dry. If you do not have a built-in chopping block, buy a portable cutting board to protect your countertops and drain boards.

Separations of countertops at walls and where the backsplash meets the counter are the result of normal shrinkage of materials. It is important to keep moisture from reaching the wood under the laminates to prevent warping.

Any major surface imperfections, i.e., chips, cracks, scratches, burns reported on the New Home Presentation form will be repaired. Repairs of damages not on the New Home Presentation form will be the homeowner's responsibility. Laminated countertops, typically, will have one or more discernible seams.

Crawl Space

Some dampness may be experienced in your crawl space. However, correctly installed landscaping will prevent excessive amounts of water from entering crawl spaces. Standing water should be reported to the Builder for inspection. Vents in the foundation wall should be left open all year. In extremely cold conditions, conditions below 15-20 degrees, you should only partly close the vents and then re-open them the next day.

Decks

Decks are a highly desirable feature for outdoor enjoyment. The wood used in building decks is usually pressure treated, but they generally require some maintenance to protect them from moisture. After the moisture from the treatment dries out and periodically thereafter, pressure treated wood decks should have a coat of water repellent and preservative. Follow the supplier's recommendations. Overtime a floorboard may warp, causing a nail to pop up. Screw down or replace the floorboard if needed.

Disposals

If you have a garbage disposal, the manufacturer's instructions will give precise directions for disposal operation. Always use cold water when the disposal is on and especially when grinding greasy substances. Many people erroneously conclude that because their garbage disposal is capable of grinding up most food waste, it is also capable of eliminating grease and other substances they would not otherwise pour down a drain. In fact, you should be equally careful not to clog disposal drains with grease. In addition, you should avoid putting fibrous materials such as banana peels or cornhusks down your disposal. Also avoid grinding bones or other hard materials. Should the drain become clogged, do not put chemicals down the disposal. (See also "Drains.")

Reset Buttons—Most disposals have a reset button that works in much the same way as a circuit breaker. Should the disposal become overloaded with a substance it cannot grind, it will turn itself off. If this happens, turn the switch off, remove the substance obstructing the disposal's operation, wait about three (3) minutes, and push the reset button. (See your instruction booklet for its location.) Turn the switch on; if it still does not start, turn it off again and check to see if you have tripped the circuit breaker. If the circuit breaker has been tripped, turn off the circuit breaker (as a safety precaution) and use a mop or broom handle to turn the rotating plate in the disposal unit until it turns freely. Restore current, push the reset button again, and turn the disposal switch on. Some disposals come equipped with a special wrench or tool that can be inserted either in a hole in the bottom of the disposal (under the sink) or into the top of the rotating plate. Turning the wrench a couple of times should loosen the material enough so that the disposal will start. **Warning:** Be absolutely sure the circuit breaker is off before inserting a broomstick, wrench, or anything else to remove material when the disposal is stalled.

Doors

Due to normal settling of your home, your doors may require adjustment for a proper fit. The Builder will make such adjustments during the warranty period.

Chips or other damage in the finish, noted on the New Home Presentation form, will be repaired.

Sticking—Sticking is the most common problem with doors. If the sticking is caused by swelling in damp weather, fold sandpaper around a wooden block and sand the edge that sticks. If the hinge screws are loose, tighten them, and if the door is still out of alignment, sand or plane the edge that sticks. Always paint or varnish areas that have been sanded or planed. Paint and varnish protect wood from moisture and help to prevent further door problems.

Warping—Warping is usually caused by excessive moisture. If a door warps, the best remedy is to dry it in the sun. If the door is still warped after being thoroughly dried, apply weights to the bulged side and leave them in place for two (2) or three (3) days.

Storm Doors—A storm door may reduce your heating costs. Storm doors are usually made of aluminum, wood, vinyl-clad wood, or solid vinyl. Homes with insulated steel exterior doors do not need separate storm doors. While less prevalent in mild climates, storm doors can still help reduce heating and air conditioning costs and provide an added security barrier.

Weatherstripping—To maintain your home's energy efficiency, exterior doors come equipped with weatherstripping made from a variety of materials, including metal, plastic, and rubber. This weatherstripping must remain in place to prevent the loss of expensively conditioned air or infiltration of outside air. Metal weathestripping may need to be re-nailed if it becomes loose, bent out away from the edge of the door, or if it does not seal tightly when the door is closed. This simple repair requires only a pair of pliers or a hammer and the right nails. For rubber or plastic weatherstripping, re-nailing or re-gluing with strong, water-resistant household glue should be all that is necessary. Do not use a cyan acrylic (super) glue.

Painting and Cleaning—Wood exterior doors should be painted when your house or trim is painted or about every four (4) to six (6) years. Homeowners should apply a sealer to the exterior wood surfaces at least once a year to keep from fading. This should be done every three (3) months if the door is exposed to direct sunlight. Varnished doors may need to be re-coated more often. Aluminum, vinyl-clad wood, and solid vinyl doors do not need to be painted. To clean painted doors, use a mild detergent. For doors with a polyurethane varnish, use a damp cloth. Doors with other types of varnish should be cleaned like good furniture. (For care and cleaning of glass in doors, see "Windows.")

Garage doors— The garage door should operate smoothly and with reasonable ease. The door can become misaligned and require adjustments, which the Builder will provide during the warranty period.

The moving parts of garage doors should be greased every three (3) months with substance specially designed for garage doors. Light gauge oil should be applied to track, rollers, hinges, pulleys and springs. The screws that fasten the hardware to a wood door should be tightened every 12 months because the wood shrinks a little as it ages, and the screws may loosen. If a hinged, wooden door sages, tightening or adding turnbuckles should bring it back into shape. Each garage door usually requires two of these, one on each of two cables crisscrossing the back of the door. An overhead door may warp inward from being left up for long periods. Usually this warp can be corrected by adjusting the nuts on the metal rods or the straps across the top and bottom of the door. It is important to replace bent or cracked panels on wooden doors to prevent other panels and the door from warping. Do not attempt to adjust the garage door tension. This adjustment could be dangerous. The Builder recommends a professional garage door company to make these adjustments.

Metal garage doors require less maintenance, but you will still need to tighten the screws and grease the track and trolley. Sliding garage doors that drag can be realigned by tightening the bolts on the wheels that run on the overhead track. Also, check that the floor guide is not out of line. Any type of garage door spring repair should be left to a professional.

Electric garage door openers can be the cause of misalignment and no adjustment will be made if you have installed an opener subsequent to the purchase of your home.

Garage overhead doors cannot be airtight and typically some light will be visible around the edges and across the top or bottom of the door.

Dents or other damage on garage overhead doors noted on the New Home Presentation form will be repaired. Touch-up paint may not match exactly.

Locks—If added home security is a concern, consider these items before installing additional locks to your doors:

- Locks should be located so that they cannot be reached by breaking a small windowpane in the door.
- Locks that require a key on the inside are potentially dangerous if an emergency occurs. When this type of lock is used, be sure a spare key is always handy to prevent anyone from being trapped inside your home.
- Chains or locks will be most secure if the screws and bolts used for attachment go all the way through the door or frame and cannot be removed from the outside.
- A metal insulated door may require the services of an expert to install new locks properly. (See also "Security Systems.")

Lubricate door locks with graphite or other waterproof lubricant. Avoid oils, as it will gum up.

Drains

Each plumbing fixture in your home has a drain trap. This –U shaped piece of pipe is designed to provide a water barrier that prevents the airborne bacteria and odor of sewer gas from entering your home. Infrequently used fixtures (such as basement showers) should be turned on regularly to replace evaporated water and ensure that the barrier remains intact. Because of their shape, traps are also the source of most clogging problems.

Bathtubs, Sinks, and Showers—When the drainpipe from a tub, sink, or shower becomes clogged, try unclogging it with a plunger first. The rubber cup of the plunger should cover the drain opening, and the water should come well up over the cup edge. Working the plunger up and down rhythmically 10 to 20 times in succession will build up pressure in the pipe and do more good than sporadic plunges. Plug and overflow outlet with a piece of old cloth. When working on a double sink, be sure to close the other drain.

If the plunger does not work, use a plumber's snake. You can rent or purchase one at a hardware or plumbing store. Turn the handle of the snake in the same direction when removing it as you did when inserting it. This technique should keep anything to the snake from coming loose before it is removed.

If the drain can be partly opened with the plunger or snake boiling water (140° F for plastic pipes) may complete the job. If not, you can open the trap under the fixture. (The access point to a tub or shower trap is usually a small panel in an adjoining closet wall or floor.) Put a bucket or pan under the trap to catch the water. A piece of wire or plumbing snake may help to dislodge the blockage. Most household drain cleaning products are safe to use for minor clogs and slow drains if you carefully follow the manufacturer's instructions.

Toilets—A clogged toilet should be treated almost the same way as a clogged drain. The trap is built into the toilet and is therefore less accessible. Instead of a snake, use a coil spring-steel auger, which can be bought or rented from a hardware or plumbing supply store. Insert the auger so that the point goes up into the trap. Turning the handle of the auger will break up the blockage or catch it so that it can be removed. An auger is easier to use if one person holds it while another turns the handle.

Prevention—Ordinary washing soda (not baking soda) added to a drain on a regular basis will help to keep it clear of the grease from soap and cooking utensils. Run hot water through the drain, turn off the water, add 3 tablespoons of washing soda and follow it with just enough hot water to wash it down the drain opening. Let stand for 15 minutes and run more hot water. To avoid clogging drains or

toilets, never pour grease into them. (See also "Plumbing," "Toilets," and "Bathtubs, Sinks, and Showers.")

Driveways, Walks, and Steps

Various materials are used for driveways, walks, and steps. Concrete and asphalt are most common for driveways. Walks and steps are usually concrete, but they may be made of brick or other material. Concrete is not replaced due to cracking.

Concrete—Your Builder has anticipated stresses on concrete driveways, walks, and steps and has provided contraction and expansion joints to minimize cracking. However, cracking is one of the characteristics of concrete, and a method of entirely eliminating cracks has not been discovered yet. Unanticipated cracking sometimes occurs from conditions such as severe frost. Ordinarily, the cracks are of no serious consequence. Minor cracks in slabs are not warranted and should be sealed with a waterproof concrete caulk to prevent moisture from penetrating to the soil beneath.

Protect concrete from abuse by chemical agents such as pet urine, fertilizers, radiator overflow, repeated hosing, de-icing agents or road salt that can drip from vehicles. All of these times can cause spalling of concrete. Repeated hosing of the garage slab can cause spalling and settling and it therefore is not recommended. Exposed aggregate driveways may be damaged by ordinary rock salt. Use a de-icer stating it is safe for exposed aggregate surfaces.

Cracks—Minor repairs can be made by following these steps:

- Roughen the edges of the crack if they are smooth.
- Clean out loose material and dirt.
- Soak the old concrete thoroughly. The crack should be sopping wet, but water should not be standing in it.
- Fill the crack with patching cement slightly higher than the crack to allow for shrinkage. Commercially prepared patching mixtures need only the addition of water, but be sure the mixture you buy is appropriate for concrete.
- Cover the patch and keep it damp for several days. The longer the drying time, the stronger the patch will be.
- When the cement has partly set, remove excess cement with a wire brush. At this stage the surface of the cement appears sand like.

Excessive settling, heaving and/or cracking should be reported in writing so that an inspection can be made. Settling, heaving or cracking will be deemed excessive if it results in negative (toward the house) drainage. If changes in the grading, drainage, and landscape design or fails to perform needed maintenance, the homeowner will be responsible for the correction.

Repeated hosing of concrete for cleaning, animal urine, radiator overflow, fertilizer, failure to shovel snow and ice, ice melting agents or road salts from vehicles are some of the causes of spalling. The Builder is not responsible for repair of spalling concrete.

Cleaning of your garage floor by hosing can cause settling, spalling and increase soil movement by allowing water to penetrate any existing crack(s). The Builder will not be responsible for repairs needed due to such action.

Maintenance of drainage away from all concrete slabs will minimize cracking and other forms of movement. Good drainage away from your home will help protect your home's foundation.

Brick—(See "Exterior Brick Walls" under "Walls and Ceilings.")

Winter Safety—Protect your driveways, walks, and steps by removing snow and ice as promptly as possible after snowstorms. Take care not to gouge paved or brick surfaces while chipping ice. If you cannot remove a stubborn layer of ice, use cat litter, sand, or fine mulch for traction. They are safe for driveways, walks, steps, and nearby grass or shrubs. Avoid applying salt in any form. Repeated thaw and freezing with salt and chemicals can damage concrete, brick mortar and asphalt, and salt will kill grass, shrubs, and trees. Provide an outdoor floor mat to prevent the cat litter or sand from being tracked into the house. Another mat just inside the door will provide additional protection for carpets and floors.

Asphalt—Oil, gasoline, or similar substances can cause serious damage if dropped or spilled on a blacktopped driveway, walkway, or parking area. Wash the surface immediately with sudsy water and then rinse. Do not rest sharp objects such as outdoor furniture legs and bicycle stands on the asphalt because they can poke holes in it. Never burn leaves or anything else on your driveway or parking area.

Exposed aggregate driveways and walks should be sealed with a sealant manufactured for use on exposed aggregate driveways.

Do not permit heavy vehicles such as moving vans or concrete trucks drive on your new concrete. This concrete is not intended to bear the weight of this type of vehicle.

Electrical Receptacles

The wiring in your new home meets the code requirements and safety standards for the normal use of electrical appliances. Ordinarily, small appliances that require personal attendance for their operation may be plugged into any electrical receptacle without fear of overloading a circuit. However, the use of a large appliance or of many small appliances on the same circuit may cause an overload. If a circuit breaker trips frequently, contact a licensed electrical contractor to learn whether additional wiring is needed. (See "Circuit Breakers.")

Ground-Fault Circuit Interrupters—The receptacles in your kitchen and bathrooms are equipped with ground-fault circuit interrupters (GFCIs). These safety devices are commonly installed where small appliances (such as hair dryers) are used near sources of water which can "ground a person and put him or her at risk of electrocution if the appliance malfunctions or is dropped into water. GFCIs cut the flow of electricity to the appliance within a fraction of a second if they detect a change in the flow of current to (and from) the appliance. Test your GFCI receptacles monthly by pressing the "test" button.

If a GFI breaker trips during normal use, it may be an indication of a faulty appliance and some investigation is in order.

If any circuit trips repeatedly, unplug all items connected to it and reset it. If it trips when nothing is connected to it, an electrician should be contacted and the problem should be reported. If the circuit remains on, one of the items unplugged is defective and requires repair or replacement.

If a wall outlet is not working, check first to see if it is one that is controlled by a wall switch. Next check the breaker. Homeowners have experienced the embarrassment and expense of calling the electrician out only to have a bulb replaced or a switch turned on! This could result in a charge by the electrician.

Do not use any bulbs, which exceed the wattage listed on the light fixture.

Expansion and Contraction

All building materials are subject to expansion and contraction caused by changes in temperature and humidity. Dissimilar materials expand or contract at different rates. This may result in separation between materials. The effects can be seen in small cracks in drywall and in paint, especially where moldings meet sheetrock, at mitered corners, where tile grout meets the tub or sink, etc. This can be alarming to a uniformed homeowner, however it is very normal. Shrinkage of wood members of your home is inevitable. It will be most noticeable during the first year, but may continue beyond that time. In most cases, paint and caulking is all that is needed to conceal this minor evidence of a very natural event. Even properly installed caulking will shrink and must be maintained.

Exterior Caulking

All exterior caulking should to be checked every three (3) months, especially at the corners. This is a preventive measure to keep water from entering exterior wood surfaces and causing wood rot. This is a homeowner maintenance responsibility.

Faucets

Even with normal use, the faucets in your home will require occasional maintenance or repair.

Aerators—Cleaning the aerators will be your most frequent task in maintaining faucets. An aerator adds air to the water as it leaves the faucet and eliminates splashing. It also reduces water usage, thereby saving you money. Aerators are most common on kitchen and bathroom sinks. To clean an aerator, first make sure the drain is covered, then unscrew the aerator from the mouth of the faucet, remove any deposits, remove and rinse the washers and screens, replace them in their original order, and put the aerator back on the faucet. The frequency of the need for cleaning will depend on the condition of the water, but generally every three (3) or four (4) months is adequate.

Leaks—All leaks will raise your water bill and leaking outside faucets can cause a damp basement. Leaking inside or outside faucets generally can be fixed by replacing the washers. Some faucets with single controls for hot and cold water have no washers, but their cartridges, which last longer than washers, must still be changed periodically. Before attempting to repair a faucet, turn off the water at the nearest intake valve. Washers and cartridges are available at most hardware or plumbing supply stores.

Outside Faucets—If the temperature falls below freezing in the winter and frost-proof fittings are not provided, outside water connections for summer gardening should be turned off and inside and outside pipes drained before cold weather begins. This precaution should prevent the freezing and bursting of theoutside pipes and fittings. The control valve is usually inside your home close to where the water supply goes through the exterior wall. Open the outside faucet to drain off any excess water. Remove the garden hose and store it for the duration of the cold weather.

Fireplaces

Wood Burning Fireplaces - Most of us feel a fireplace is an excellent way to create a warm, cozy atmosphere. However, without sufficient information, the use of your fireplace can easily result in a lot of heat (and many dollars) being wasted. To help prevent that, consider the following facts and suggestions.

It is recommended that your first fire be a low heat fire. This will help to cure the refractory liners of your new fireplace.

Burning a fire should be looked at as a luxury, adding much to the atmosphere and just a little to the heat in your home. Only about 10% of the heat produced by a fire is radiated into the house. As it burns, the fire draws warm air from your home for combustion. This means you pay to heat the air in your home and the fireplace then uses it to burn wood, sending 90% of the resulting heat up the chimney.

When not in use, the damper should be closed. Leaving it open is equivalent to having an open window in your home. If the fireplace has glass doors, and the fire is still burning after use, but you are finished enjoying it, close the doors to prevent heated air from being drawn up the chimney until your damper can be closed.

Use caution of the use of glass doors. Do not close them over a roaring fire, especially if hard woods (oak, hickory, etc.) are being used because this could result in glass breakage. Also, when closing the doors over a burning fire, open the mesh screen first. This prevents excessive heat build-up on the mesh, which might result in warping or discoloration. The objective in building a fire should be a clean, steady slow-burning fire, especially if you are burning kindling and newspaper under the grate. Two to three layers of logs stacked with air space between the largest logs to the rear works best.

One sheet of paper burned on top of the stack will help the chimney start to draw. Any logs 6” in diameter or larger should be split. Do not burn trash in the fireplace and **never** use any type of liquid fire starter. Do not throw logs in the fireplace as this may crack the refractory liner.

Old ashes and coals should be removed from under the grate when completely cooled. A light layer is desirable as an insulator and will help to reflect heat.

The timing on having the chimney cleaned will be determined by the way the fireplace is used and the type of wood you burn. Heavy use with softwoods or improperly seasoned wood will result in the need for more frequent cleaning, probably once a year.

Occasionally throwing a handful of salt on the fire will help prevent the accumulation of soot, and it will also add color to the flames. However, salt should never be used in metal fireplaces. A chimney cleaning professional should periodically check and clean your chimney.

Gas Fireplaces—A gas fireplace provides the comfort and style of a wood-burning unit, but requires far less maintenance. Many gas fireplaces are far more efficient than their wood burning counterparts and as a result, produce less pollution. Gas fireplaces may have a chimney or may vent exhaust gases (mainly water vapor and carbon dioxide) directly outside without a chimney. If your gas fireplace is vented, the flue or vent should be kept open at all times, even when the fireplace is not in use. Use the same safety precautions with a gas fireplace as you would any other gas appliance. Do not smoke while cleaning or lighting the fireplace. If you suspect a gas leak, evacuate the home and call the gas company immediately from a neighbor's house. Follow the manufacturer's instructions for maintenance, safety, and use of the gas fireplace.

Gas Non-Vented - A non-vented gas-fired fireplace uses oxygen from the room in which it is installed.The gas non-vented fireplace is a supplemental zone heater. It is not intended to be the primary heatingappliance. Provisions for adequate combustion and ventilation air must be provided. To prevent malfunction and/or sooting, a non-vented gas fireplace should be cleaned before use at least annually by a professional service person. More frequent cleaning may be required due to excessive lint fromcarpeting, bedding material, etc. It is imperative that control compartments, burners and circulating air passageways be kept clean. Should the fireplace malfunction or require service, refer to the currentmanual, which has been provided, or call an authorized service representative. Follow manufacturer safety guidelines found within the unit's manual.

Gas Direct Vent - The gas direct vent fireplace is a sealed maintenance-free unit. Should the fireplace malfunction or require service, refer to the current manual, which has been provided, or call an authorized service representative.

Gas Shut Offs - There is a shut off on the gas line at or near its connection to each item that operates on gas. In addition, there is a main shut off at the meter. These are pointed out during the New Home Presentation. If a gas leak is suspected, leave the home and call the gas company immediately for emergency service.

Floors

Floors are usually made of either concrete or wood, but they may be covered by a wide variety of materials. Specifications provide a record of the brand, style and color of floor coverings in your home. Please retain this information for future reference. The Builder does not keep this information readily available.

Concrete Floors—Concrete floors are generally maintenance free, but they are susceptible to cracking under some conditions. (For repair of such cracks see "Driveways, Walks, and Steps" and "Foundations.") Occasionally basement floors will collect water from condensation moisture in the air on cold basement walls. (For treatment of this condition, see "Foundations").

A concrete sealer will make an unpainted concrete floor easier to keep clean. Follow the manufacturer's directions for cleaning after the sealer has been applied. Unpainted concrete floors should not be cleaned with soap. Instead, use a solution of 4 to 6 tablespoons of washing soda to a

gallon of hot water. First, wet the floor with clear water. If necessary, use scouring powder with the washing soda solution. A stiff brush will help to loosen dirt. Rinse with clear water. Painted concrete floors can be cleaned with plain water or a mild soap or detergent solution.

Hardwood Floors—The hardwood floors in your new home have been precision manufactured and expertly installed and finished by skilled craftspeople. Normal maintenance should include regular vacuuming or dry mopping to remove surface dust and dirt. If the floors have a polyurethane finishyou should vacuum them regularly and wipe them occasionally with a damp (not wet) mop or cloth.Do not use water on hardwood floors finished with anything other than polyurethane. Water sometimes causes the grain to rise, and prolonged use may cause cracks from the expansion and shrinkage of the wood.

On moderately soiled floors where traffic is not excessive, cleaning and polishing can be done in one operation with clean-and-wax products. To use these remove black marks with dry steel wool, sweep or dry mop to remove loose dirt, and apply the clean-and-wax product according to the manufacturer's directions. Rinse the applicator in water to remove any soil. If floors become excessively soiled, they can be cleaned with mineral spirits or household cleaners that leave a protective coat of wax as they clean.

When applying wax or cleaner, keep it away from baseboards-little traffic occurs there. This practice will minimize the build-up of wax and extend the periods between removals. Attaching furniture rests to the bottom of furniture legs will protect your floors and distribute weight better.

The Builder will correct serious defects that are noted on the New Home Presentation form. The Homeowner is responsible for routine maintenance of hardwood floors.

Resilient Floors—Resilient floors include vinyl, linoleum, asphalt, and rubber. For daily care, remove loose dirt with a broom, dust mop, or vacuum. Wipe up spills immediately, but if a spill or spot dries, remove it with a damp sponge, cloth, or mop. It is also important to note that rubber-backed floor mats will often yellow vinyl and linoleum.

To prolong the period between cleanings, occasionally wipe resilient floors with a damp mop. When floors are dull or cannot be refurbished by mopping, clean them thoroughly with a household floor cleaner recommended by the floor manufacturer. Use just enough mechanical action with a mop, cloth, or floor scrubber to loosen dirt. Remove the cleaning solution, rinse the floor, and let it dry. Some resilient floors are designed to never need waxing, but some of them require a coat of floor polish. The flooring contractor can tell you what kind of flooring you have.

Tile Floors—Ceramic tile normally needs only a wipe with a damp cloth or an occasional wetmopping to stay clean and new looking. If necessary, a more thorough cleaning with a detergent orceramic tile cleaner will remove grime. You can also mop the floor with a solution of ¼ cup to ½ cupbaking soda to a gallon of water.

To remove particularly heavy accumulations of film from glazed tile, you may need a stiff brush and mild scouring powder. Unglazed tile may be scrubbed or scraped. To clean the joints between tiles, use a fiber brush and a mild cleanser. A special sealer for grout will make it more stain resistant. Staining agents should be mopped up promptly. Even thought they rarely affect ceramic tile, they may stain the grout.

Cracked, badly chipped or loose tiles noted on the New Home Presentation form will be repaired, as needed. The Builder will not be responsible for variations in color or discontinued patterns.

Cracks appearing in grouting of ceramic tiles at joints or junctions with other materials are commonly due to normal shrinkage conditions. New grout may vary in color from the original. The Builder is not responsible for color variations in grout or discontinued colored grout.

Sealing grout is a homeowner's maintenance responsibility.

Slate Floors—Use a sealer on the slate and then clean it with a mild detergent solution.

Marble Floors- (See care of marble under "Countertops.")

Sub-Floor - Floor squeaks are a normal occurrence due to shrinkage and expansion of the sub-floor material and are not a warrantable item.

Vinyl - Seams will occur and are sealed at the time of installation; there should be no gaps or curling at the seams. In any situation that requires replacement, the Builder will not be responsible for discontinued patterns or colors.

Foundations

The weight of the house rests upon the foundation. The foundation consists of the footing, a large mass of concrete poured into a trench, and the foundation walls, which rest on the footing. Foundation walls are usually made of poured concrete, masonry block, or wood framing. If a basement is present the foundation walls also serve as the basement walls. Foundation walls are subject to a wide variety of stresses and strains. Because the base of the wall is in the ground, it maintains a fairly constant temperature. However, the top portion extends out of the ground and may be subject to extreme seasonal temperature changes. The changes cause concrete and masonry to expand and contract.

Shrinkage or backfill cracks are not unusual in basement or foundation walls, especially at the corners of basement windows. The Builder will repair, within the first year, cracks which are in excess of an 1/8" or cracks which are permitting water to enter the basement, provided the homeowner has complied with landscaping requirements.

Slight cosmetic imperfections in foundation walls are normal and will not be repaired.

Cracks—Combinations of stresses and temperature variations may cause cracks in the basement or foundation walls. These cracks do not affect the strength of the structures and may be easily repaired if desired.

To fill medium large cracks:

- Roughen the edge of the crack if it is smooth. For large cracks, undercut the crack to form a V-shaped groove to a depth about equal to the width of the crack at the surface.
- Clean out all loose particles of cement, mortar, or concrete with a wire brush or a thin blade.
- Wet the crack thoroughly.
- Fill the crack with patching cement, allowing a little extra for shrinkage. Be sure the patching mixture is suitable for the job.
- Just before the cement hardens, rub it with burlap or a similar material to give it texture similar to that of the wall. Wetting a trowel before going over the patch for the last time will produce a smooth surface.
- Paint it to match the rest of the wall if necessary.

To fill small cracks:

- To repair small cracks, fill them with a heavy paste made by mixing dry cement base paint with a little water.
- Force the paste into the crack with a stiff bristle brush or putty knife.
- To match the existing wall finish, use a colored paint to form the paste. In lieu of cement-base paint, you may use a mixture of cement and fine sand (one part cement, two parts sand capable of passing through a 100-mesh screen) mixed with sufficient water to form a heavy paste.

For the fine or hairline cracks:

- Work cement-base paint into the crack with a short, stiff-bristle brush.

Condensation—Probably the most disturbing problem in a new home is condensation. It may look as if moisture is seeping through basement walls or slabs, pipes are leaking, or that water is coming through the windows. Condensation takes place wherever warm, moist air inside your home comes in contact with a colder surface, such as a window, basement wall, or an exposed pipe. Actually, a perfectly dry basement can have wet walls because moisture in the air condenses on cold basement walls during the summer months. Close windows during damp, humid weather and open them during clear, dry weather.

Condensation is at its maximum in new homes. When the home was new, gallons of water went into the concrete of your basement walls. This water slowly evaporates consequently raising the moisture content above normal. Proper ventilation will bring this normal drying-out process to its conclusion as steadily as possible. However, do not try to speed up the process by creating extremely high temperatures during the winter. Your home will dry out unevenly, which will exaggerate the effects of normal shrinkage. Providing outside vents for equipment such as clothes dryers may also reduce

condensation. Some warm-air furnaces have humidifiers to bring moisture content in the air up to healthy standards during winter months. If excessive humidity develops, turn the humidifier down or off.

Most homes are equipped with fans in the kitchen, bath, or utility areas that exhaust moist air and odors to the outside. Use these fans when excessive moisture is being generated, such as when cooking or using the shower. Turn these fans off as soon as possible because they exhaust expensively conditioned air, whether warm or cool, to the outside.
As our homes are constructed tighter and tighter, the more likely it is to have high relative humidity from interior moisture sources. This higher humidity can contribute to condensation on interior surfaces such as windows. Window condensation is simply the result of excess humidity and the glass only provides a visible cool surface on which humidity can condense.

Leaks—As with all the other parts of your home, basement walls are not waterproof themselves. Where conditions have warranted, the Builder has damp-proofed the underground portions of the foundation to prevent the entrance of water from surrounding soil.

Repair of basement leaks depends upon local conditions that make each case different. Before making expensive structural repairs to correct wet-wall condition, thoroughly check your drainage system. In many cases, repairing or adjusting downspouts or gutters will help to carry surface water away from foundation walls.

If the ground outside your basement slopes toward the wall, pack and bank up soil so that the water will drain away. Avoid planting shrubbery within less than three (3) feet of the foundation. Never water your plants toward the foundation. (See "Landscaping.")

Furnaces

(See "Heating Systems.")

Gutters and Downspouts

It is necessary that gutters be kept clear of debris, such as leaves or tree limbs, which might clog them and cause the water to run over the downspouts. As the homeowner, you should check gutters periodically to insure proper functioning; excess snow should be brushed off downspouts with a broom as soon as possible. Severe ice or snow build-up can damage gutters. This is not a warranted problem and repairs are the homeowner's responsibility.

Downspouts are placed to carry water to the ground and sometimes in extensions, which then direct the flow further away from the foundation of your home. These extensions are for the protection of the foundation and if added by the homeowner, they will need to be maintained. They should always be kept open and free of debris.

Vinyl gutters never need to be painted. Paint is optional for aluminum gutters. Gutters made of most other metals will need a coat of rust-retardant paint whenever the rest of the house is painted (every four (4) to six (6) years).

Hardware

Doorknobs and locks should operate correctly. Some slight adjustments may be needed due to normal shrinkage of the framing.
Dents, chips, scratches, etc., in door hardware, towel bars, shower doors or mirrors that are noted on the New Home Presentation form will be repaired.

Heating Systems

Good maintenance of the furnace can save energy dollars as well as prolong the life of the furnace itself. Carefully read and follow the manufacturer's literature on use and care. The guidelines below apply to most all furnaces.

If your gas furnace requires lighting – see instructions on the unit or call the Gas Company.

Heating systems, methods, and installations vary widely. The design of the system in your home has been carefully matched to the size of your home and the climate of your region. Learn everything possible about the system installed in your home: how it operates, how it functions at maximum efficiency, and what kind of fuel it uses. If any questions arise after studying the instruction manual for the heating system, the heating contractor can probably provide the answers.

REMEMBER TO CHANGE THE FILTER MONTHLY during the heating and cooling seasons. A clogged filter can slow airflow and cause cold spots in your home. Do not wait until the filters appear dirty before changing them. If they are not changed and trouble develops, the air conditioning warranty may be voided. This is one of the most frequently overlooked details of homeowner furnace care. The Builder suggests you buy filters in large quantities for the sake of convenience. Only a few minutes are needed to change the filter.

Experiment with the adjustable registers in the home to establish the best heat flow. Generally, heat can be diminished in seldom-used interior rooms. However, this is a very individual matter and the system will need to be balanced for one's own comfort. Damper controls are generally located on the duct lines where they branch off from the air handler. In some two-story homes, dampers are an important element of balancing airflow with the system.

For maximum comfort and efficient energy use, place furniture and draperies to allow unobstructed airflow from registers.

Have a trial run early in the fall to test your furnace. The same applies to the A/C in the spring. If service is needed, it is more convenient if it is discovered prior to the heating/cooling season getting underway.

If no heat is available, the checklist in the manufacturer literature may help identify the reason. Only after the following the checklist instructions without success should you make a service call. You may incur a service charge if it is found to be a maintenance checklist item.

Normal temperature variations from floor to floor (depending on the style of the home) can be as much as eight (8) degrees or more on extremely cold days. The furnace will typically operate more frequently but for shorter periods of time during severe cold spells.

It is normal for the heating system to emit an odor for a few moments after an extended period of not being used such as after the summer months. This is caused by dust that has settled in the ducts and should pass very quickly.

Never burn rubbish or anything but the designated fuel in the heating system.

Thermostats—The thermostat (usually located on an inside wall) helps to keep your home at a comfortable temperature. Adjusting the registers in the various rooms or the dampers in the ducts from the furnace to the registers can further regulate individual room temperatures. If your home is heated by a forced-air system, the thermostat may also contain controls for the cooling system.

Lowering the thermostat during sleeping hours and when your home will be unoccupied for a prolonged period can reduce the heating bill. Some homes are equipped with set-back thermostats that can be programmed to reduce the setting shortly before bedtime and return it to normal prior to morning or wake-up. If your home has a heat pump for heating and cooling, do not set back the thermostat unless your home will be unoccupied for a prolonged period.

Maintenance—The controls on all types of heating systems occasionally malfunction. Such problems are usually solved by a simple adjustment, but unless you are trained to make such adjustments, you should rely on the skills of a professional. Also call on a professional for an annual inspection and cleaning of your heating system. The best time to do this work is late summer or early autumn.

Filters—Many forced-air systems have air filters, usually found near where the cooled air returns from other rooms. These filters remove dirt and dust from the air. For efficient heating, they should be replaced at least every three (3) months during the heating season. In some areas more frequent changing may be desirable. If you cannot see through the filter when held up to a light, it needs to be changed. Usually, replacement involves removing one (1) or two (2) metal screws, pulling out the dirty filter, and inserting a new one bought from a home supply store. Other systems have latches or dual stacked filters. Some systems may have electronic air filtering systems. Read the instruction manual for your system for specific directions. Radiant-type heating systems do not have filters.

Humidifiers—Some heating systems are equipped with a humidifying device. These systems require occasional cleaning to remove accumulated mineral deposits that can interfere with proper functioning. Some systems have an evaporative pad, which may need to be periodically replaced. The manufacturer's instruction manual will indicate how often you should do this.

Gas Heating System—Refer to the manufacturer instructions and warranty.

Reducing Utility Bills—Your household's lifestyle is the most significant variable affecting youutility bills. Identical homes on the same street my have utility bills that vary. By living "smarter" inyour new home, you can maximize the benefits from insulation and other energy saving features theBuilder has installed.

Common sense activities—such as those that follow—can produce substantial savings:

- Closing the windows and doors when the heating/cooling system is working.
- Not running the dryer, stove, or oven on a hot summer day.
- Adjusting thermostat settings to 68° F (or lower) in the winter and to 75° F (or higher) in the summer.
- Opening drapes or blinds on the sunny side of your home during winter days to take advantage of passive heating from the sun's warmth.
- Closing the drapes, blinds, or curtains on hot summer days when the sun shines into your home.

Think about the way you live in your home and look for ways to improve the efficiency of the heating and cooling system.

During winter vacations, do not shut off the heat or you may come home and find frozen or burst pipes.

Heat Pumps

Instead of a separate furnace and air conditioner, your home may have a heat pump for winter heating and summer cooling. During the colder months, heat pumps work by drawing on the small amount of heat present in the air (or in the ground in the case of ground-source heat pumps) to heat your home. In the summer, heat pumps reverse this process and cool the air in the house by drawing heat outside.

Most heat pump systems use electric heating elements to supply additional heat when outside temperatures are too low to draw sufficient heat to keep the house warm (typically below about 30° F). Keeping the thermostat at a constant setting limits the use of this backup system and will help keep utility bills down. Avoid manually setting back the thermostat unless you plan to keep your home at a lower temperature for a fairly long period of time, such as over a weekend when you will be away. Do not use a programmable set-back thermostat with a heat pump.

Follow the manufacturer's instructions on changing air filters and other routine maintenance.

Hoods

(See "Ranges, Ovens, and Broilers")

Indoor Air

Today's energy efficient homes are built to provide maximum comfort at minimum utility costs for you, the homeowner. Energy efficient design, however, results in tighter homes with a slower rate of air exchange than older homes. Cigarette smoke, pets, materials used in furniture or carpet, and other factors may affect the quality of the air in the home. Follow manufacturers' instructions and regularly change the air filter in the heating, ventilation, and air conditioning system (if it is a forced-air system). Replacing air filters and regularly letting in fresh air by opening windows and doors are simple ways to help keep the indoor air healthy. The kitchen and bathrooms may have exhaust fans. Use them to eliminate excessive moisture and odors. Kitchen exhaust fans (and some bathroom exhaust fans) usually have filters for grease or dust. Clean or replace exhaust fan filters as necessary.

Insulation

The effectiveness of blown insulation is diminished if it is uneven. The last step in any work done in your attic (i.e., the placement of stored articles, etc.) should be to check that the insulation lays smoothly and evenly. Do not step on the drywall ceiling; personal injury or damage to the wall can result.

Landscaping

The foundation of your home is constructed beginning with excavation into the earth. When the foundation walls are complete, the area surrounding them is backfilled with earth. This area is not as compact and dense as undisturbed ground. Water can penetrate through the backfill area to the lower areas of your foundation. This can cause potentially severe problems such as wet basements, cracks in foundation walls and floor slab movement. This can be avoided through proper installation of landscaping and good maintenance of backfill drainage.

Routine inspection of downspouts, backfill areas and other drainage components is an excellent maintenance habit. Backfill areas will settle and require prompt attention to avoid damage to the structure and possibly voiding of the warranty.

Downspout extensions should be kept in position so that roof run-off is channeled well away from the foundation area of your home. We recommend the careful consideration of landscape design and selection of planting materials to minimize the demands of your yard on water supplies.

Proper care of the grounds around your home cannot only add to its beauty but also protects the structure of your home. (see page 31)

Grading—Drainage swales or other discharge channels were sized and sloped to accommodate water runoff and should be kept clear of debris such as leaves, gravel, and trash. Allow six (6) inches of clearance between your grading and the wall siding; otherwise, water may enter the joint between the foundation and the wall material, or the wood may decay**.** Depressions may form as the soil around your home becomes compacted. Fill any depression with dirt or sand so that water will not form puddles or cause dampness.

Lawn and Plants—Water your new lawn and shrubs as required. Give special attention to bare spots. When watering the lawn, avoid sprinkling painted parts of your home; doing so can reduce the life expectancy of paint. If you plant flowerbeds near the home, do not disturb the earth next to the foundation. Always dig the beds several feet away.

The Landscaping Plan—Plan your landscaping according to how you want your grounds to look in ten (10) years. Long-range planning takes more time, but it pays off. Not only does a good landscaping plan increase the beauty and value of your home, it can also result in lower cots to heat and cool your home in the long term. Strategically placed trees and shrubs can shade your home in summer and shield it from chilling winds in the winter.

Before you dig a single hole, you need reliable, specific information about trees and shrubs commonly used for landscaping in your area. Later, you can make a list of plants that appeal to you and consult a garden encyclopedia for information about them. Then you can decide what to plant, where to plant it, and how much of a budget you need.

As you learn about plants, remember that the landscaping around your home is an extension of the indoor living space. The ground should include defined areas for work and play, often best screened or partitioned by trees, shrubs, or other greenery.

You will probably want plants of various sizes and shapes that attract the eye both near and far. You will need taller shrubs for privacy, trees for shade, flowering trees for color, low-growing plants under windows, and thicker evergreens for backgrounds.

The beauty of having a landscape plan is that you need not feel compelled to carry out the plan all at once. You can work it out a little at a time, as gradually or as rapidly as time and money allow, yet still know where you are going at every step.

When you start the actual design, make a sketch of your property to scale. Carefully plot the exact location of the house, walks, walls, trees, and any other landscape features. Indicate doors and windows too because they will influence the location of plants.

Sketch in the areas you want to reserve for turf, and precisely locate each shrub and tree that you have chosen to plant. Try to figure their space requirements at maturity, particularly if you expect to plant young stock. And take care not to plant anything that will grow up to block a good view or shut out light needed at a window. Be aware of ground water, underground springs and erosion due to the acts of God may occur depending on your home's location and the time of the season.

If all this sounds like a lot of work, remember that a thoughtful plan minimizes wasted effort in the longrun. You should make a long-range plan, stick with it, and make changes only if they improve the overall scheme. The period when everything seems barely a foot high will pass soon enough. Before you know it, your landscaping will be the envy of the neighborhood. It could increase the value of the property.

Louvers

(See “Attics.”)

Mold and Mildew

(See "Bathtubs, Sinks, and Showers.")

Moldings

(See "Trimmings and Moldings.")

Motors

The motors of many heavy-duty appliances such as air-conditioners, washing machines, dryers, dishwashers, and others may require periodic servicing. Consult your appliance's manual for information about the care of these motors.

Phone Jacks

Telephone jacks are generally furnished by your service provider. Initiating phone service is the homeowner's responsibility. Moving outlets for decorating purposes or convenience is an owner expense.

Plumbing

Many plumbing clogs are caused by improper garbage disposal use. Do not allow food to accumulate in the sink or in the garbage disposal. Be sure to have a strong flow of cold water when running the disposal. Allow the unit and water to run full two (2) minutes before turning the unit off. Failure to do this will cause a stoppage. Allow the water to run 10-15 seconds after shutting the disposal off. Do not run the disposal and dishwasher at the same time. Never pour grease or oil substances into the garbage disposal or other fixtures.

Very rarely, a piece of metal, glass, etc. may cause a jammed condition in your disposal. To free this type of jam, use the disposal wrench to move the disposal in a reverse motion. If your disposal stops running, first try to reset it using the reset button. This button is located on the bottom of the disposal. Resetting the disposal, and/or jams, are homeowner maintenance items. For more information, see the disposal warranty literature.

Never pour paint thinner down sewer lines.

Do not use plumbing fixtures as receptacles for photographic or developing solutions. Developer stains
are permanent.

Fiberglass tub or shower units are easily cleaned with a detergent cleanser. Steel wool and abrasive cleansers should never be used on fiberglass.

Heat should be set at 65° degrees when you are away during the winter months. Garage doors should be kept closed to protect plumbing lines, which may run through this area. However, in hard freeze conditions, pipes and fixtures are subject to burst and precautions should be taken.

Review and follow manufacturers timetable and instructions for draining several gallons of water from the bottom of the conventional water heater. This helps to prevent build-up of chemical deposits from the water and prolongs the life of the tank as well as saving energy dollars. Make sure the heater is

full of waterbefore the electricity/gas is turned on. Your water heater warranty does not cover hard water conditionsand the water in your area could be hard. This causes lime or scale build-up on the heating elements. Ifthis scale becomes too thick, it will cause the element to burn out.

If you have a water heater malfunction, check for some external fault before contacting **your** plumber. This checklist may eliminate the need for a repair call and assist in restoring hot water service.

If you have an electric hot water heater be certain that the water heater electrical switch is turned to the ON position. Check for loose or blown fuses in the water heater circuit.

If the storage capacity of the water heater is exceeded, incoming cold water will not be able to meet the expected temperature until the water use is suspended and until the water in the tank is warmed to the thermostat setting.

If your home has a gas hot water heater, see the instructions on the unit or call the Gas Company.

Lime scale may accumulate on the heating element of the hot water heater and cause a hissing sound. This noise is normal although the element(s) should be cleaned. Contact the plumber for this service.

Follow manufacturer's directions for cleaning fixtures. Abrasive cleansers will remove the shiny finish leaving behind a porous surface that is difficult to maintain. Scraping or banging metal utensils in the kitchen sink will gradually scratch and dull the surface and a porcelain enamel surface may chip. The finish is susceptible to stains that are difficult to remove. If your home is equipped with a stainless steel sink, you will find that it is highly resistant to scratching, will not chip or stain. It is easily cleaned with a good detergent and the luster can be enhanced and any water spots removed by wiping down with vegetable oil. You should never use steel wool or any abrasive type cleanser on your stainless steel sink.
If your home has a tankless hot water heater system, reference the manufacturer instructions.

WARNING: SOME CHEMICAL TOILET TANK CLEANING MAY CAUSE DAMAGE TO TANK MECHANISMS. WARRANTIES WILL BE VOID ON FIXTURES IF CHEMICALS ARE USED FOR CLEANING.

Never step into a bathtub or shower with shoes on. Shoe soles can carry hundreds of gritty particles, which can scratch the surface.

It will occasionally be necessary to remove and clean the aerators on faucets to allow proper flow of water. When the flow from the sink faucets decreases or becomes irregular in shape, remove the aerator. Observe the relation of one part to another so that it can be reassembled in the same way. Clean the screen, reassemble and replace on the spout. This homeowner maintenance item should be performed frequently.

When waste water gurgles and seeps away slowly from a sink, lavatory, bathtub or shower, or backs up in the toilet bowl, there is foreign matter in the waste line that is restricting the flow of water. To reduce the chance of a sewer line or commode becoming clogged, do not dispose of hair, grease, lint, diapers or rubbish through the commode or sink drains. The plumber is responsible only for freeing such lines when the cause of clogging is related to faulty installation. Otherwise, the homeowner will bear the expense involved in freeing the lines.

When a commode is new, some dirt may lodge in the cutoff valve. In this case, repeated flushing may free dirt. A worn or sticking valve may be at fault after your home is several years old. If the float level being set too high causes running water, the level can be easily adjusted downward by turning the thumbscrew at the valve end of the float stem. For best operation, the water level in the tank, when full, should rest on the "water line" stamped inside the tank.

Since the use of the fixture will affect the water level and wear on the seats and washers, this minor repair will be homeowner maintenance.

Outside faucets are "frost proof" but in order for this feature to be effective, hoses must be removed after each use. If a hose is left attached, the water that remains in the hose can freeze and expand back into the pipe causing a break in the line. ***REPAIR OF A FROZEN LINE TO AN EXTERIOR FAUCET IS A HOMEOWNER RESPONSIBILITY***.

Care should be taken to avoid breaking the outside faucet when using a garden hose. As an added precaution, it is a good idea to tie the hose to a stake driven in the ground near the faucet. When pulling the hose, the pressure will be on the stake, not the faucet.

The plumbing in your home was installed by a professional and generally should need only minimum maintenance if you care for it properly. If any problem arises, attend to it promptly to prevent a bigger and often more costly problem.

Water Shut Offs - Each sink and commode has a shut off of its water supply. The location of the main water shut off and meter are pointed out during the New Home Presentation.

Intake Valves—All members of your household should become familiar with the water intake valves in your plumbing systems. Label each one with a shipping or luggage tag. You will rarely need to use them, but in the event of an emergency or if you need to make minor repairs, they will be easy to locate. Intake valves for toilets are usually under the water chamber. Those for sinks are usually under the sink, while the main intake valve is usually near the point at which the water enters the house.

Leaks—Copper pipes should last the lifetime of your home, but if a joint should loosen, it will need to be re-soldered—a job best left to a plumber. Plastic pipes should also last the lifetime of your home, and a plumber should likewise repair a loose joint.

If your washing machine, dishwasher, or other water-using appliance appears to leak, first check to see that the drain trap is completely open. Sometimes a partially clogged drain can cause an overflow within the appliance. (See also "Drains.")

Noisy Pipes—Pipes make noise for a variety of reasons. Among the most common are a worn washer, a loose part in a faucet, or steam in a hot water pipe. The condition causing the noisy pipes should be corrected promptly because sometimes the noise is accompanied by vibration. A strong vibration can cause fittings to loosen and leak. (See also "Bathtubs, Sinks, and Showers," "Drains," "Faucets," and "Water Heaters.")

Frozen Pipes—To prevent pipes from freezing, never leave your home unheated during cold weather. During an extended period of severe cold, provide at least a little heat for unused rooms and baths that are generally not heated. In cold climates, be sure all entrances to crawl spaces are closed during cold

weather. For summer homes normally unoccupied in the winter, ordinary antifreeze will provide protection for toilets and drain pipes, but it cannot be used in the water distribution pipes.

If a pipe should freeze, proper defrosting may prevent damage. The pipe must be thawed slowly to prevent the formation of steam, which could cause it to burst. You should first restore heat to the affected part of the house. A frozen pipe is most likely to be on an outside wall exposed to winter winds. Open all faucets connected to the lines so that steam can escape if any forms during thawing. Begin the thaw at the frozen point nearest the faucet. A thermometer held against an exposed pipe helps to locate this point.

A heat lamp set at least 6 inches from plasterboard or panel-type wall will thaw the pipes behind it. In some homes, the baseboard panel can be removed and the nozzle of a hair dryer inserted with the warm air directed parallel to the pipes. A hair dryer or heat lamp is also suitable for defrosting exposed pipes. Again, the air from the hair dryer should be directed parallel to the pipes. As the pipe thaws, move the source of heat toward the frozen area until the job is complete. If a sink trap is frozen, boiling water poured into it may solve the problem. If a large amount of pipe is involved or if an underground pipe is frozen, call a plumber. Plumbers have equipment for thawing pipes electrically.

Radon Detectors

Your home may be equipped with a radon reduction system designed to remove radon gas from soil underneath the foundation of your home. Generally, radon reduction systems require no special maintenance, but be sure to leave the components of this system (which should be clearly marked) undisturbed so that they can function properly.

Ranges, Ovens, and Broilers

Many ovens and broilers, both built-in and floor models, have self-cleaning cycles and clean themselves continuously. Others must be cleaned in the conventional manner. The outside of your stove, oven, or broiler can be cleaned with a nonabrasive household cleaner or baking soda sprinkled on a damp cloth or sponge. Or the manufacturer may make a special appliance cleaner that both cleans and protects against stains. If your burner panel or oven front is stainless steel, you may want to use a stainless steel cleaner on it. Never use harsh, abrasive cleaners on the outside of stoves, ovens, or broilers.

Do not let the oven go too long between cleanings. A lightly soiled oven can be cleaned with a solution of ¼ cup baking soda to 1 quart of water. Rubbing with a paste of baking soda and water may be necessary for some spots. A heavily soiled oven may require a household oven cleaner. Choose one that is non-corrosive and nontoxic and follow directions and cautions closely.

Electric—Electric stoves usually have a circuit separate from other kitchen appliances. If your range fails to work, check the proper circuit. (See “Circuit Breakers.”)

Gas—If the burners of your stove, oven, or broiler fail to light, check to see if power is getting to the electric ignition (a clicking sound usually indicates that the unit is functioning). If your stove has a pilot light, make sure that the pilot light is lit. If your electric ignition or pilot appear to work but the burners still fail to light, they may be clogged and should be cleaned, or the diffusers may not be sitting properly on the burner. If they are removable, the burners can be soaked clean in a solution of washing

soda, but do not soak them in an aluminum pan. A wire brush or thin stiff wire may be helpful in removing burned food particles from the holes in the gas burners. When using wire, be careful not to push the material farther into the holes. If you suspect that gas is leaking, turn off the main valve (near the meter) and call the gas company immediately. **Warning:** Do not light matches, smoke cigarettes, or use your phone or electrical switches if you suspect a gas leak.

Hoods—The filters in range hoods need to be cleaned or changed periodically. For location and directions, consult your instruction manual.

Microwave Ovens—Follow owner's instruction booklet for safety and use. Because some containers and utensils can permanently damage microwave ovens, make sure that the ones you use in your oven are safe for use with a microwave.

You can remove some spatters and drips from the oven's interior with a damp cloth. To clean greasy spatters, use a sudsy cloth and rinse. A cloth dampened in a solution of baking soda is also safe, but never use a commercial oven cleaner on any part of your microwave oven. Do not use abrasives such as cleaning powders or steel or plastic pads on any part of your microwave oven. They will mar the surface.

For exterior cleaning, wipe the case and control panel with a damp cloth and dry thoroughly. Do not use cleaning sprays, large amounts of soap and water, abrasives, or sharp objects on the panel.

Registers

(See "Air-Conditioning Systems.")

Roofs

The roofing material on your home is of asphalt composition. While it will provide many years of good service and weather protection for your home, a few reminders on the importance of proper maintenance of your roof could save a great deal of expense and discomfort in the future.

Flashing seals those places where the roof abuts walls, chimneys, dormers, or valleys where two (2) roof slopes meet. If a leak should occur, call a qualified roofer to make the repair.

Limit walking on your roof. The weight and movement will have a tendency to loosen and break the integrity of the roofing materials, which can in turn result in leakage. Never attempt to walk on the roof of your home when shingles are wet – they are extremely slippery. If you have to walk on the roof for any reason, be careful not to damage the surface of the flashing.

During hot weather, composition of shingles will be soft and pliable and they can be damaged; extremely cold weather will make them brittle and similarly subject to damage.

After severe storms, a visual inspection of the roof for damages is necessary; notify your homeowners insurance company if damage is noted. Roof, gutters and downspouts may receive damage from severe weather and are not warrantable.

Maintain the gutters and downspouts so that they are free of debris and are able to quickly and efficiently drain precipitation from the roof.

A qualified roofer should inspect the roof at least every three (3) years.

Freeze-Thaw Cycles—Winter storms followed by relatively mild temperatures cause freeze-thaw cycles that can create leaks in roofs. Most roof shingling is not a waterproof membrane. Rather, shingles are meant to shed water down their overlapping courses into gutters or off the roof overhang. Erratic weather conditions can cause a build-up of water—either from snow or ice dams formed on the roof or in gutters and downspouts. This water backs up under the shingles or eventually seeps through the shingles, causing leaks. Although roofs with a shallow pitch are more susceptible to this phenomenon than are steeply pitched roofs, no conventional home is completely immune to the problem. Remove ice blockades from gutters and downspouts, and attempt to remove built up ice and snow from the lower portions of the roof. In areas of the country where freeze-thaw cycles are prevalent, some homes are equipped with heating elements in their gutters and even part of the way up the roof to counteract the freezing process. (See also "Gutters.")

Screens

(See "Windows.")

Security Systems

Although security systems are installed to work autonomously, you should regularly check that the alarm and circuits are in working order and inspect sensors one by one. Consult your instruction manual on how to inspect the sensors. Check any primary and backup batteries once a month, and replace them at least once a year.

Septic Tanks

Your Builder will tell you if your home is part of the municipal sewer system or if it uses a septic system for waste. All septic tank installations must meet local health standards. With proper care and attention, septic tanks will serve as satisfactorily as sewers. Otherwise, they can become a burdensome expense and, when functioning improperly, a neighborhood health menace.

If your home uses a septic system, learn the location of the septic tank and its drainage field. For best results, inspect it annually. The frequency with which a septic tank should be cleaned depends on its size, daily sewage intake, and the number of people it serves.

Unless the tank is large enough to accommodate additional wastes, the use of a garbage disposal will require the tank to be cleaned more frequently. When the total depth of scum and solids exceeds a third of the liquid depth of the tank, the solids should be removed. With ordinary use and care the tank will probably need cleaning every two (2) years. Your local health department may help you locate someone to perform this service.

Because warm weather hastens bacterial action, septic tanks should be cleaned in the spring. The waste material gives off noxious odors and may contain dangerous bacteria. Therefore, it should be disposed of in a manner approved by your local health department. No chemicals are capable of

reducing solids in a septic tank to the point where cleaning is unnecessary. Cleaners generally should not be added to the sewage.

Showers

(See "Bathtubs, Sinks, and Showers.")

Skylights

(See "Windows.")

Smoke Detectors

If your new home is equipped with smoke detectors, certain basic procedures will ensure that they function properly in an emergency. Carefully review the manufacturer's literature to familiarize yourself with each unit. Smoke detectors are either battery operated or connected to your home's electrical system. Most battery-operated detectors will continue to sound until a reset button is pushed. Other types will stop automatically when smoke is cleared from the chamber. Check the manufacturer's literature to see which type you have so that you may act accordingly if the detector is accidentally triggered. Periodically test the detector to see if it is working properly.

Different types of detectors will require different care. Follow the manufacturer's recommendations for periodic maintenance. Such maintenance may include replacing the light bulbs, replacing the batteries, vacuuming the unit inside and out, and cleaning it with a cotton swab and alcohol. (See also "Carbon Monoxide Detectors" and Radon Detectors.")

Sprinkler Systems (Irrigation System)

Sprinkler System maintenance is necessary to ensure the most efficient use of the water that is being applied. Efficient irrigation is important because the majority of the total water used in the average home is applied to the landscape.

Irrigation controllers should be checked at the beginning of each growing season before running the sprinklers for the first time. First, find the manual for the controller. If the manual has been lost or misplaced, check the manufacturer's web site for downloadable versions or information on how to order one. Becoming familiar with the irrigation controller's manual will make spring start-up quick and easy.

Open the controller's cabinet and clean out any cobwebs, dirt, or debris. This is also a good time to change the battery and check the wiring for any loose connections. Check all wire connections, including the rain sensor connection if one is attached. If a rain sensor is not attached to the controller, consider adding one to your irrigation system. A rain sensor is inexpensive, simple to install, and will automatically shut off the irrigation system when a significant amount of rain falls.

Next, check the time and day showing on the controller and correct them if necessary. This is also the time to set up an irrigation schedule. If the landscape has slopes, sandy, or clay soils, split the irrigation runtime into two or more cycles to avoid runoff or ponding. Also, remember that in the spring and fall less water is needed to keep plants healthy than in the heat of the summer.

Once the irrigation schedule is programmed, inspect the sprinkler system by checking the valves, sprinkler heads, and emitters. Before running the system, remove the last sprinkler head in each line and let the water run for a few minutes to flush out any dirt and debris. Replace the sprinkler head and turn the system on, running one valve at a time.

Make the necessary adjustments and repairs to the system in order to apply the water as evenly as possible. The flow control on the valves may also be adjusted to fine-tune the system. When this is done, turn the irrigation system on manually to make sure it is operating as programmed.
Water bills will be your responsibility. The system should be demonstrated and ensure the system does not have any leaks at the New Home Presentation.

Winterization—Basic winterization of a sprinkler system is quite simple. The water supply should be turned off at the main valve and the irrigation controller should be set to the "rain" or "off" setting. Each valve should be turned on to release pressure in the pipes and water should be drained from the system to protect any components that could freeze. Your system may have drain valves that can be opened for drainage, or you may have to blow out the system using air. You may wish to have your irrigation system blown out by an irrigation professional. Consult your local irrigation supply store for a recommendation.
The goal of irrigation system maintenance is to create the most efficient irrigation system possible so that water is not wasted on the landscape. While perfect efficiency is impossible to achieve, most irrigation systems can be dramatically improved by regularly following these simple maintenance practices. Examine your irrigation system carefully each spring and several times during the growing season (at least once a month), to keep it operating at peak efficiency. Most importantly, use an irrigation schedule that accounts for plants' changing needs over the growing season.

Irrigation System Maintenance Checklist

Controller

- **Controller manual**
  Find the manual for your irrigation controller and make sure you are familiar with its operation.

- **Controller cabinet**
  Open the cabinet for the irrigation controller and make sure it is free of debris such as cobwebs or dirt. This is also a good time to replace the battery.

- **Wiring**
  Check all wiring connections for wear and breakage. Repair if necessary.

- **Time/day settings**
  Check the time/day settings on your controller to make sure they are correct. This is also a good time to set up an irrigation schedule.

- **Irrigation schedule**
  Set up your irrigation schedule. Ask your local County Extension office for a schedule tailored to your area.

Sprinkler System

- **Flush system**
  Before running the system, remove the last sprinkler head in each line and let the water run for a few minutes to flush out any dirt and debris. Replace the sprinkler heads and turn the system on, running one valve at a time.

- **Broken or clogged heads**
  Look for obviously broken or clogged heads and make the necessary repairs. Consider installing irrigation heads that have screens to prevent debris (grass, soil, or bugs) from clogging the sprinkler heads. Clean out screens that may be clogged.

- **Broken/leaking valve or pipe**
  Observe the lowest head in each station for leaks. Algae or moss may be growing in the area and may indicate the problem. Water bills are the responsibility of the homeowner, as well as monitoring the water line from time to time to ensure there are no leaks. The Builder will ensure that the water lines are installed in good workmanlike manner. Water lines in the ground may experience movement caused by the ground expanding and contracting given the time of the season.

- **High pressure**
  Look for a very fine mist from spray heads caused by excessive pressure in the system. Correct the problem with a pressure regulator after the water meter, pressure regulating sprinkler heads, or added devices on individual sprinkler heads. *Visit your local irrigation supply store for needed materials.*

- **Low pressure**
  Check to see if the sprinklers are covering the desired area uniformly. If your pressure is too low, try watering at a different time or modifying your system so there are fewer sprinklers on each valve.

- **Incorrect spray arc**
  Check to see that irrigated areas are being covered completely. Consider adjusting the spray pattern if possible, or replace the spray nozzle(s) with another that has the correct spray pattern. *Visit your local irrigation supply store for needed materials.*

- **Low head drainage**
  Check to see if water is draining through the lower heads. Install check valves where appropriate, or replace existing heads with heads that contain built-in check valves. *Visit your local irrigation supply store for needed materials.*

- **Mismatched heads**
  Check to see that different types of heads are not used in the same irrigation zone. Nozzles should also be correlated for matched precipitation rates. *Visit your local irrigation supply store for needed materials.*

- **Over-spray**
  Look for over-spray of sprinklers onto sidewalks, driveways, and streets. The sprinklers' spray patterns should either be adjusted or changed to a pattern that will stay within the planting area.

- **Spray pattern blocked or misdirected**
  Look for blocked spray patterns. Remove vegetation and other obstructions that may be blocking the spray, or consider raising the heads.

- **Sunken heads/short pop-ups**
  Check each head to see that it is at ground level. Raise sunken heads to grade or replace existing short pop-up heads in the lawn with taller pop-ups, as necessary. You can also trim around existing heads to avoid blocking the spray but you will have to do this on a continual basis. *Visit your local irrigation supply store for needed materials.*

- **Tilted heads**
  Heads should be aligned vertically, except in sloped areas. In a sloped area, heads should be aligned perpendicular to the slope to achieve proper coverage. Tilted heads can cause ponding and uneven coverage.

- **Uneven or extended head spacing**
  Check to see if you have head to head coverage between sprinklers. If necessary, consult a qualified professional to design a system with head-to-head spacing.

***Sprinkler System information excerpt Extension Utah State University; November 2004; HG/Irrigation/2004/01. Kelly Kopp, Extension Water Conservation and Turfgrass Specialist and Jennie Hoover, Water Conservation Specialist, Center for Water Efficient Landscaping.*

Steps

(See "Driveways, Walks, and Steps.")

Stoves

(See "Ranges, Ovens, and Broilers.")

Termites

Termites are easier to bar from a new home than to exterminate from an old one. You should conduct your own inspection in the spring of each year. Look for possible remains of the winged insects. Search the sides of basement or foundation walls and piers for the earthen tubes that termites build to reach the wood above the foundation. Use the blade of a knife to test wood for soundness. If you suspect the presence of termites, consult a professional exterminator.

Toilets

Never flush down the toilet materials such as hair, grease, garbage, lint, diapers, sanitary products, and rubbish. Such waste stops up the toilet and sanitary sewer lines. The new low-flush toilets use far less water than previous models, and can offer a substantial savings on water bills in the long term. (For unclogging a toilet, see "Drains.")

Cleaning—A variety of commercial cleaners are made especially for toilets. Use them according to the manufacturer's directions, but do not mix them or use them with household bleach or any other cleaning product. And never use them in anything but the toilet.

Leaks—Most toilets have a water chamber, flush valve, overflow pipe, float, and ball valve. If the water chamber appears to leak, the moisture may only be condensation forming on the outside of the tank and dripping to the floor. (See "Condensation" under "Foundation.")

If water leaks into the bowl through the overflow pipe, adjust the float so that it will closer to the bottom of the tank. Flush the toilet, and if it still leaks, the inlet valve washer probably needs to be replaced.

If the water trickles into the bowl but is not coming through the overflow pipe, it is coming through the flush ball valve. The connections between the ball valve and the flushing handle may need aligning so that the ball will drop straight down after the handle has been pushed. A worn ball valve or dirt or rust on the ball seat will let water leak into the bowl. If the ball valve or the ball seat is dirty or rusty, clean them. If the ball is worn, replace it.

Trim and Molding

Trim and molding, such as baseboard and quarter-round, may separate from the floor and leave a small space that will catch dust and dirt. This separation is part of the normal process of settling and shrinking in your home. Loosening the quarter-round or other trim and re-nailing it in its proper position will remedy the problem. If a small separation occurs at corners or at other seams, it can be patched with wood filler; however, sometimes further settling will bring pieces together. The filler can be stained or painted to match the molding. A thin piece of cardboard or heavy paper slipped under the molding will protect the floor or rug while you are painting.

Separation of wood trip from the adjacent material is a normal result of shrinkage, which can require caulking and/or touch-up painting as a repair; this is a homeowner maintenance responsibility.

Tubs

(See “Bathtubs, Sinks, and Showers.”)

Walks

(See “Driveways, Walks, and Steps.”)

Walls and Ceilings

Your home has two types of walls: bearing and non-bearing. Non-bearing walls may usually be altered without fear of structural damage, but alteration of a bearing wall must be done carefully to avoid reducing its bearing capacity. All exterior walls are bearing walls. All ceilings are essentially the same in structure, but they are made of a variety of materials. The structural lumber in your home has been selected in sizes and grades to provide a safety factor well beyond what is required to carry the load. Some shrinkage may occur in these framing members, but your home has been designed so that any settling will be as even as possible.

As with other building materials, wood may contract or expand with weather changes. It is not affected by heat or cold, but it may shrink under extreme dryness or swell under extreme humidity.

Drywall - Some cracking, nail "pops" and/or drywall seams may become visible in walls and ceilings. These occurrences are normally caused by the shrinkage of the wood to which the drywall is attached.

Repairs will not be made on flaws, which are only visible under particular lighting conditions.

If the drywall repair is the result of a plumbing leak or other warrantable repair, the Builder will complete the repair of the area damaged with original paint. Paint touch-up may not match surrounding area.

Sheetrock (Gypsum Wallboard)—Sheetrock should last for the life of your home without undue maintenance. In some cases, normal shrinking in framing boards causes minor cracks and nail pops to appear in wallboard. Please reference your Limited Warranty Agreement for repair, if warrantable. Popped nails should not affect the strength of the wall. At that time, fill the cracks with spackling compound (available from a paint or home supply store) and a spackling knife, smooth it out with fine sandpaper, and then redecorate the entire surface. Except in very unusual conditions, cracks should not reappear. To prevent cracks wider than half an inch from reopening, apply the spackling compound, then cover the crack with a strip of fiberglass mesh made for this purpose, cover the mesh with thin layers of spackling compound, feather the edges well, and sand smooth.

Unusual abrasions may scuff or indent the surface of plaster or gypsum walls. If this occurs, fill the indention with two (2) or three (3) applications of joint compound used for drywall taping. Smudges or spots on interior stucco finish may be removed by rubbing it with a fine grade sand paper (size 00).

Interior Foundation Walls—(See "Foundations.")

Interior Paint and Wallpaper—The interior walls and ceilings of your new home should give you long service if properly cared for. Consult your paint dealer for the correct cleaning compound for painted and/or wallpaper surfaces. Your dealer can also assist you in choosing from hundreds of possible paint colors when you wish to redecorate or make color changes.

If paint starts to blister or peel, there may be an underlying problem. Touch up the spot immediately to prevent it from spreading and look for the cause of the problem, such as moisture penetration through overhead joints or finishes.

Paint is only warranted by the manufacturer and does not carry any additional warranty by the Builder

The Builder will touch up paint only as indicated on the New Home Presentation form. Homeowners will receive a sample of each interior paint color to be used for subsequent touch-ups. This paint should be stored so that it is not affected by freezing temperatures.

Paint touch-ups are sometimes visible under certain lighting conditions.

For additional details on touch-ups needed as a result of repairs; see individual categories of drywall, plumbing, etc.)

Due to wood characteristics, color variation will result when stain is applied. There will be no repair or replacements on such variations.

Exterior Brick Walls—Brick walls add a special character to a home. Do not expect each brick to be perfect and spaced perfectly. Small surface chips or cracks and slight variation in size and placement are normal and help to create the texture and beauty of the brickwork. The mortar joints in brickwork are subject to weathering over the years. When this occurs, the joints should be pointed up (new mortar inserted) to maintain a weather-resistant exterior. A bricklayer should perform this work. Glazed tile or bricks may be cleaned with a soap-and-water solution. Stubborn discolorations usually may be removed by gently scrubbing with a nonabrasive household cleaner or a special tile cleaner.

Clay masonry homes may require cleaning by a contractor specializing in this type of work. He or she may use a steam or a steam-and-water jet with a suitable cleaning compound.

Fading of exterior paint or stain can be expected due to the effects of sun and the weather. Wood trim painted white or light colors will more readily show grain and cracks therefore require additional maintenance.

Wood trim will develop some minor cracks and raised grain as it ages and dries; however, the Builder generally uses minimal exterior wood. Much of this will occur during the first year. Raised grain can result in peeling paint; however, this is not due to a defect in materials or workmanship. Paint maintenance of wood trim and gutters is a homeowner's responsibility.

The brick lintels (the steel structure that supports the brick over doors and windows) should be checked for rusting and repainted as required with rust proof paint.

Color names, numbers and paint brands are noted on your Specifications.

Efflorescence—A white powdery substance composed of one or more crystallized soluble salts sometimes develops on masonry walls. It usually can be removed by scrubbing with water and a stiff brush.

Exterior Wood Siding—If your home has wood siding, you shouldn't have to worry about wear. Do not over paint the exterior of your home because excessive repainting builds up an unnecessary and troublesome thickness of paint. The siding should be scraped, sanded, and repainted to prevent moisture penetration and rot. Siding made of coated plywood or plastic-finished wood may be guaranteed for the life of the house.

Aluminum, Steel, Vinyl, and Other Exterior Synthetic Siding—Many synthetic sidings are guaranteed against cracking, chipping, peeling, and termites for ten (10) years or more. Most of them resist marring and scarring and are nearly maintenance free. Dirt and fingerprints around doors and windows are easily removed with a mild detergent solution. For other areas, occasional hosing may be sufficient.

Some shrinkage of siding is to be expected; if gaps are created, it is the homeowner's responsibility to caulk and touch-up. Failure to caulk can result in water damage and is not the Builder's responsibility. Paint or stain touch-up may not match exactly. Slight "waves" can be seen in siding under certain weather conditions and time of day; this cannot be entirely eliminated.

Vinyl siding is virtually maintenance free; however, some care and maintenance is necessary. Please consult full warranty and care information included with your warranties. Care should be taken when using grills or other heat sources near vinyl siding.

Water Heaters

All water heaters (whether gas or electric) have a control mechanism to govern water temperature. The dial should be set at 120ºF or lower. Your household's individual preferences should determine the hot water temperature. The lower the temperature setting, the less fuel you will use, which could produce considerable savings on your utility bills. Placing an insulation jacket on the water heater will bring additional savings. On gas heaters, be sure the air intake is not obstructed. Avoid storing anything near the water heater that might obstruct the flow of air or create a fire hazard.

Water heaters normally collect small quantities of scale and dirty water. To remove this material, first shut the water intake valve and turn off the power source for your water heater (gas, electric, etc.) Failure to turn off the power source could cause the heating element to burn out. Then open the valve at the bottom of the heater and completely drain the tank. Open the water intake valve and allow some water to flow through to flush out the remaining sediment. Shut the valve at the bottom of the tank. When the tank is full, follow manufacturer's instructions for restoring heat. In localities with especially hard water, a water softener will reduce the frequency of cleaning.

Temperature and Pressure Relief Valve—Every three (3) or four (4) months you should check the temperature and pressure relief valve on your water heater to be sure the lever works properly. If the thermostat should fail to operate properly, this valve would prevent a dangerous increase in water temperature and pressure.

Noisy Pipes—If you hear noises in the pipes when the hot water is turned on, it may mean that there is air or steam in the pipes. The steam may result from the water being too hot. Reducing the temperature of the water may help. (See also "Plumbing" and "Faucets.")

Water Intake Valves

(See "Plumbing.")

Windows

Your windows may be framed in a wide variety of materials, including aluminum, steel, wood, or solid vinyl-clad wood. Wood frames should be painted whenever the house or trim on the house is painted (every 4 to 6 years). Aluminum, vinyl, and vinyl-clad wood do not need painting. Steel frames should be painted with a rust-inhibiting paint. Aluminum can be left to age to a uniform gray. The oxidation (or graying) will protect it from the elements. If you prefer to maintain the brighter new look, a coat of wax will work well. To restore aluminum that has turned gray, polish it with steel wool. However, prevention is easier than polishing.

Skylights—A skylight may leak if its' seal breaks. When your roof is being inspected for general maintenance, have your seals, caulking, and flashings around skylights inspected for any cracks or interruptions.

Cleaning—If the outside of a window is extremely dirty, use a piece of crumpled newspaper to wash the glass with a solution of equal parts vinegar and water or three (3) tablespoons of denatured alcohol per quart of warm water. You may also use a household glass cleaner. Lightly soiled windows will usually respond to a solution of 1-cup vinegar to 1 gallon of water. Apply the cleaning solution with a sponge or lint less cloth, and dry the glass with a chamois or lint less cloth. A rubber squeegee will speed the drying process. The window frames can be cleaned with a mild detergent solution. (For marble sills see care of marble under "Countertops.")

Windows may become stuck to the tracks and require loosening prior to opening. If a window does not slide easily, rubbing the channel with a piece of paraffin (an old candle will do) or a bar of soap should help. The same treatment will work for sliding wooden closet doors. For metal doors and windows, use a silicone lubricant. Never use oil, because oil will collect dirt and eventually make sliding more difficult.
For information for how to maintain and care for your windows, please refer to your window manufacturer's website.

The Builder supplies window screens on all operational windows in you new home. Screens are not warranted following the acceptance on the demonstration checklist.

Request for Service

REFER TO SUBCONTRACTOR LIST FIRST!

Complete in the spaces below your request for service. Describe in detail the item, location and nature of service being requested. *Please send your request certified mail per the Limited Warranty Agreement to ensure delivery; however, we will accept requests by fax, email, regular mail or internet to:*

Stoneridge Homes, Inc.
105 Von Braun Drive NW, Huntsville, AL 35806

Fax: (256) 852-0338
www.stoneridgehomesinc.com

You will be contacted and an inspection appointment set. Please remember our service hours of operation are **Monday through Friday, 8:00 a.m. to 4:00 p.m. Unless otherwise stated by subcontractor.**

TODAY'S DATE: _____ Community: _____

Homeowner(s): _____ Closing Date: _____

Address: _____

Home Phone: _____ Work Phone: _____ Cell Phone: _____

Email Address:

_____

Item / Location / Detail	Inspection / Action to be taken Warranted / Not Warranted

Humidity, Condensation and Your Home

When cold weather sets in, condensation can appear on windows and sliding glass doors. Often called "sweaty windows," the condition is the result of high humidity and low temperatures.

It can block the view, drip on the floor, and freeze on the glass. It's annoying. While it is natural to blame the windows, you shouldn't. Window condensation is simply the result of excess humidity, and the glass only provides a visible cool surface on which humidity can condense.

Regardless of the window manufacturer or whether the window is made of wood, vinyl or aluminum, humidity will condense on any window if conditions are right. The situation is usually temporary and can be handled by making adjustments to reduce interior moisture.

Frequently Asked Questions

What is condensation?

Fog and water droplets on windows are forms of condensation. So is the water that appears on the outside of a glass of iced tea in the summer. It all comes from water vapor in the air.

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What causes condensation on windows and sliding glass doors?
Cold air holds less moisture than warm air. When temperatures start to drop, warm air within your house comes into contact with cool glass surfaces. Water vapor that can no longer be held by the cooled air is deposited on the glass. During the first weeks of Winter, it can take several days for your home's interior water vapor levels to drop enough to avoid condensation. The process can repeat itself if moisture is added to the air in your home, or if there is a quick drop in temperature during a cold snap.

Why does condensation appear on windows and sliding glass doors first?
Condensation is generally seen first on windows and sliding glass doors because they tend to have the lowest temperature of any of the visible surfaces in the house.

Do windows cause condensation?
Windows do not cause condensation. They provide relatively cool surfaces where water vapor can condense.

Do drapes and window shades cause window condensation?
No, but drapes and other window coverings can restrict the flow of warm room air over glass surfaces. Therefore, condensation is more likely to occur when drapes are closed and shades are pulled down.

What causes condensation on the inner surfaces of storm windows?
This indicates that air is leaking outward past the inner window, and is being trapped by a tight-fitting storm window. The moisture in that trapped air condenses onto the interior glass surface of the storm window. Many storm windows have one or more vents to the outside to relieve this problem.

Is there anything I can do to my windows to eliminate condensation?
If you have windows with single-pane glass, consider replacing them with windows that have double-paned glass with a low-e coating and argon gas filling. This is not guaranteed to eliminate condensation, but at the least, it should significantly reduce it.

Is window condensation really reduced that much with double-paned glass?
Laboratory testing shows that modern double-paned windows with low-e glass and argon gas allow about 37% relative indoor humidity without condensation (at 70 F inside, 0 F

outside). Old single-pane windows only allow about 12% relative indoor humidity.

What is humidity?
Humidity is water vapor, or moisture, in the air. Usually it is visible, but sometimes, such as with steam or ground fog, it's concentrated enough to be seen. Visible or not, all air contains some moisture.

Where does the moisture come from?
There are many things that generate indoor moisture. Perspiration and breathing of the occupants of a home adds moisture to the air. So does cooking, baths and showers, doing the laundry, etc. In fact, every activity that uses water adds moisture to the air. The normal daily activities of a family of four can add more than 18 gallons of water a week into the air in their home, greatly increasing interior relative humidity.

What is relative humidity?
Air can hold only a limited amount of water vapor, and that amount depends on the air temperature. When air at a certain temperature contains all the vapor it can hold, it's said to be "saturated", which means a relative humidity of 100%. When it holds only half the water vapor it can hold, the relative humidity is 50%. Cooler air cannot hold as much water vapor as warmer air.

What are some other symptoms of excess humidity?
Problems like peeling paint, rotting wood, buckling floors, insulation deterioration, mildew, and even moisture spots on ceilings and walls.

How do I know if I have excess indoor humidity?
Check for damp spots on ceilings and room-side surfaces of exterior walls, particularly closets. Look for water and ice on the interior surfaces of windows and doors.

Excessive interior humidity can be annoying to a homeowner and destructive to a home. It can damage sheetrock, paneling and window sills. It can also penetrate walls, deteriorating wood framing and reducing the effectiveness of insulation.

What does excess humidity do to my home?
Excess humidity contributes to the deterioration of a home. Excessive humidity can pass through walls and freeze in the insulation. In spring it melts, damaging your ceiling and walls. Humidity has been known to force its way out through siding to form blisters under exterior paint.

Can moisture actually go through walls?
Yes, through a force called "vapor pressure". Moisture in wet air tries to flow toward drier air to equalize itself. This flow acts independently of air currents. In winter, inside air is much more humid than colder outside air. So, the vapor pressure actually pushes the inside moisture through wood, plaster, concrete and brick, toward the outside.

What happens then?
Paint and varnish can block the flow of moisture, causing condensation to occur between the inside and outside walls, or under exterior paint surfaces. It can rot a home's wood frame and blister the paint.

Is condensation more prevalent in any geographical region?
Yes. Condensation is more apt to occur in climates where the average January temperature is 35 F or colder.

Does condensation occur only in winter?
Usually, but it can occur during cold weather anytime, and occasionally it will form on the **outside** of windows on hot, humid summer days, when your air conditioner has cooled the glass.

Does condensation depend on whether my home is new or old?
Generally, yes. Before the late 1970's, houses were not built as weather-tight as later ones. With the recent emphasis on energy-efficiency and ongoing improvements in construction techniques and materials, newer houses are much "tighter." An unfortunate by-product of these advances has been the tendency to lock moisture inside. Without adequate provisions for ventilation, excessive moisture can build up in the home, revealing itself as condensation.

Controlling Indoor Humidity

How do I measure indoor relative humidity?
To get an accurate reading, you can buy a humidity-measuring instrument such as a hygrometer or a sling psychrometer. Otherwise, watch your windows for symptoms of excess humidity. When excessive moisture collects on the inside glass in a living room or bedroom, you're approaching the humidity danger level.

Isn't high indoor humidity healthy in winter?
That's a common belief, but there is little evidence to support it. High or low humidity in a heated house has not been

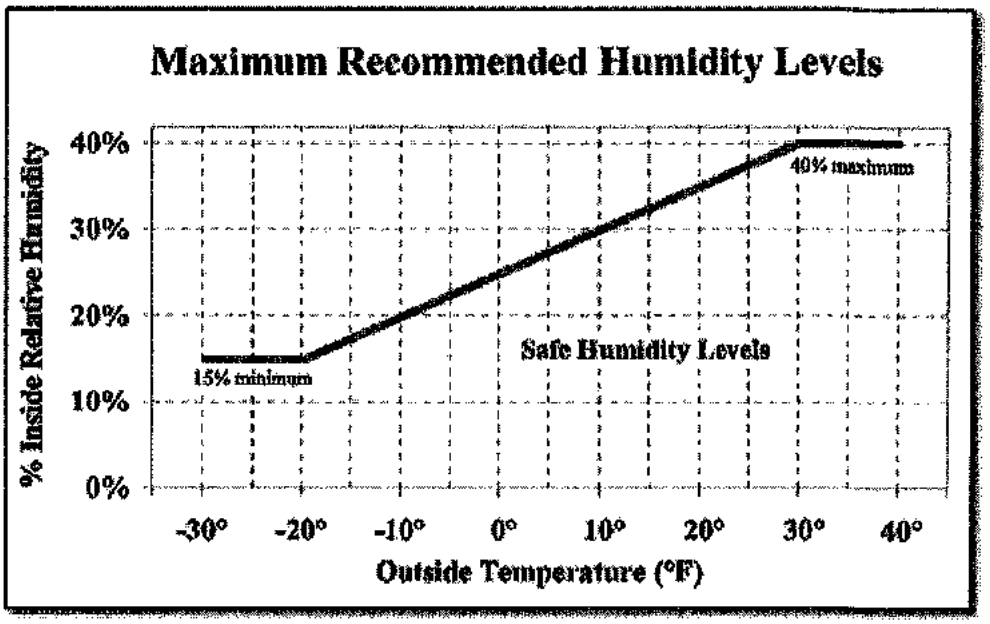
shown to be an important health factor to a normal healthy person.

What are the recommended indoor relative humidity levels for winter?

The University of Minnesota Engineering Laboratories performed a series of long and careful experiments on that subject. The following table shows the maximum safe humidity for your home, paint, insulation, and structural members:

Recommended interior relative humidity

-30 F or below -- not over 15%
-20 F to -10 F -- not over 20%
-10 F to 0 F -- not over 25%
0 F to 10 F -- not over 30%
10 F to 20 F -- not over 35%
20 F to 40 F -- not over 40%
(Assumes 70 F indoor air temperature)



Based on engineering studies conducted at the University of Minnesota Laboratories

When safe humidity levels are maintained, condensation is very unlikely, and a healthy interior environment exists for the home and its occupants.

What are some low-cost ways I can reduce or eliminate condensation?

- If you have a hot air furnace, install an outside fresh air intake so that high-humidity interior air is not being pumped back into the house.
- Use exhaust fans in the kitchen, bathrooms, and laundry. They not only help reduce excessive moisture, but will clear away stale air as well.
- If you have a basement, take the necessary steps to prevent leakage of soil moisture into the basement. These steps will vary with soil and drainage conditions on your lot.

Ventilate your home. Because outside air usually contains less water vapor, it will "dilute" humidity of inside air. This takes place automatically in older homes through constant infiltration of outside air. But again, in newer "tighter" homes, the only way outside air can get in is by ventilation.

How can I ventilate my home?
There are basically two types of ventilation: interior and structural ventilation.

As a temporary solution, open a window in each room for just a few minutes. Remember that inside air continually gains humidity through daily living activities. Opening windows allows the stale, humid air to escape, and fresh, dry air to enter.

After a shower, for example, open the bathroom window or turn on the exhaust fan, so steam can go outside instead of remaining in the home.

Structural ventilation is slightly more complex, but will save you costly repair bills in the long run. Miniature louvers in exterior walls can be installed to prevent moisture from condensing between the outside and inside walls. This will keep paint from peeling as a result of indoor vapor pressure.

Does structural ventilation include attics?
Yes. Many homeowners cover all attic louvers in winter in hopes of saving fuel. If the attic is properly insulated, this practice can cause harm. Because the indoor moisture penetrates ceilings, then condenses on the cool underside of

the roof and can even form frost. If the attic were ventilated, moisture would be transferred to the outside air.

What harm can attic condensation do?
A lot. Moisture condensing in attics produces mildew, or rotting conditions. Or it drips down to the ceiling below to damage plaster or paint. Thermal insulation also becomes wet and provides less resistance to heat loss.

Are some kinds of attic ventilation better than others?
Yes. A combination of vents at the eaves and at the gable ends is better than gable vents alone. And, a combination of continuous eaves and ridge venting is best of all. However, regardless of the type you have, there should always be at least two vent openings, located so that air can flow in one and out the other.

How much attic ventilation should I have?
That's a difficult question to answer, because the size and number of vents depends on the location of the home, wind direction, physical size of the building, quality of workmanship and kinds of building materials used. A heating and ventilating contractor should be able to tell you how much ventilation your attic should have.

What about the crawlspace? Should it be ventilated, too?
Yes. The crawlspace beneath a house is another place where ventilation is important. The crawlspace can evaporate gallons of water each day. When you seal the crawlspace, that water penetrates the floor above and causes more humidity problems in the home.

Providing foundation vents in the crawlspace reduces the humidity, and a vapor barrier (like polyethylene film) on the ground prevents moisture leakage into the house above.

Can excessive humidity do any damage?
Excessive interior humidity can be annoying to a homeowner and destructive to a home. It can damage sheetrock, paneling and window sills. It can also penetrate walls, deteriorating wood framing and reducing the effectiveness of insulation. It can cause the paint to peel from the sash of wood windows. Water can run down into window frames, causing dampness in the adjacent walls.

Are there any cases where window condensation is only temporary?
Yes, there are primarily three: new construction or

remodeling; the beginning of each heating season; and after quick changes in temperature.

At the beginning of the heating season there may be a certain amount of temporary condensation. During the humid summer your house absorbs some moisture. After the first few weeks of heating, your house will dry out, and there should be less condensation.

Can windows help control moisture in my home?
Only in the sense that they can be opened for ventilation. Otherwise, windows are only indicators of excessive moisture in the air.

Summary

The best way to avoid condensation is to **reduce excess humidity inside your home.**

While it can certainly be a problem, in the vast majority of cases, it can be controlled or eliminated.
